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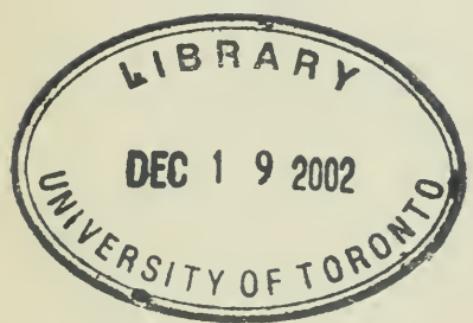
ORIGINAL ARTICLES.

ON HYDROPHOBIA, AND A VISIT TO THE PASTEUR INSTITUTE, PARIS.*

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HYDROPHOBIA is one of the most appalling of the maladies to which the human race is liable. Until quite recently believed to be incurable, its terminal stages are so terrible that the surgeon in attendance can only look on, with little, if any power, of mitigating the symptoms, till death puts an end to the agonising struggles of the patient. I once saw a patient dying of hydrophobia, and I hope never to see another!

In giving a short account of its nature, and the new remedy proposed for its treatment, I shall avail myself, without special quotation, of information contained in several articles which have appeared in recent years in various periodicals, in most instances confirmed by several visits I made to M. Pasteur, in the old institution in the Rue d'Ulm, and this autumn to the splendid "Institut Pasteur," of the Rue Dutot, in the Quartier Vaugirard, Paris.

Hydrophobia, rabies (*la rage* of the French), is a malady

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8104

which has been seen in many animals besides man and the dog. Wolves, foxes, cats, deer, and other animals are subject to it.

However it may have originated, it never now appears to arise *de novo*, but always from the bite of an animal previously affected, or from the application of the virus, from wherever obtained, to a breach of the surface of the body. Dogs are by far most subject to it, hence it is reasonable to conclude that when other animals are affected the virus must have been communicated to them either directly or indirectly from a rabid dog.

A preliminary question of great interest is whether the disease could be totally stamped out by dealing with dogs as the primary source of the contamination. This is beyond the scope of my paper, but it seems to me that if a clearly preventable disease is the cause of a certain number of deaths each year—varying according to place and circumstance—some means for preventing it could be found, and should be rigidly applied. I do not propose to wound the susceptibilities of those who make pets and companions of these interesting animals, but I think it behoves all those who take much interest in the canine race, themselves to devise and propose some means to obviate the danger arising from dogs living in our midst, without resorting to the wholesale extermination of all dogs except those which are of real use to man, such as shepherd's dogs.

There is no doubt that the universal use of a properly devised muzzle or mask would soon put an end to hydrophobia, and as shepherd's dogs are useful for the bark and not for the bite, they could be included,. and that would embrace all dogs except a pack of hounds, which problem I must leave to the sportsmen. It might at first be difficult to enforce such a law, but if every dog found without a muzzle were to be at once destroyed, there would soon be no dogs going about unmasked.

It is unnecessary to take up time with any description of rabies as seen in the dog, as its symptoms are popularly known. But I may state that the disease in animals occurs in two forms; one, the violent or convulsive that is usually seen in the dog ; the other, the dumb or paralytic, which is most commonly observed in rabbits which have been inoculated with the virus. In them, as the name indicates, the symptoms are those of paralysis, which begins in the extremities and gradually extends to the muscles of respiration and swallowing, so that the immediate cause of death seems to be inanition,

owing to the inability to take food, and ultimately the loss of the power of breathing.

In man, the bite of a rabid animal, even when accompanied by some laceration, usually heals rapidly, leaving a very small scar. Of course, if there are any local complications, they cause the same sort of disturbance as in other lacerated wounds, but of themselves they rarely cause the inflammation, suppuration, and cellulitis, which characterise what are commonly called poisoned wounds.

Then follows a time, termed the period of incubation, during which the person is unconscious of any trouble at all. This period varies greatly in length, but the average time is from four to eight weeks, rarely much under four weeks, but often as many months, and sometimes longer.

This is a very important observation, because from the time of recovery from the bite there is a period of five or six weeks or more during which the person is practically in his usual health, and it is while he is in that state, before the first symptoms of the malady have had time to show themselves, that M. Pasteur proposes to put him through a modified form of rabies, which makes him proof against the virus, before it has incubated into a condition in which it can contaminate the system.

After the termination of the period of incubation, whether three weeks or three months, the symptoms of hydrophobia begin. I need not go into details. A primary stage, lasting two or three days, often occurs, a general discomfort and restlessness, feelings of hot and cold, &c. Then comes the period of the more marked symptoms, proving fatal in from one to six days. These may be described as intermittent convulsive spasms, becoming rapidly developed into the most frightful agony. They usually begin with twitching of the muscles of the jaws and throat, and often rapidly extend to the muscles of respiration. Sometimes in gasping for breath the sufferer gives out a strident sound, which has given rise to the popular delusion that he barks like a dog. These reflex convulsive movements are exaggerated by the slightest disturbance, by a breath of air blowing on the face, and as is well known, by the least sound of water flowing or splashing or even dropping. There is usually a viscid mucus in the mouth and throat which gives great uneasiness. The patient retains consciousness till quite near the close of the scene; but is often affected with the greatest terror of his impending fate. and not unfrequently is tortured with the most painful delusions. All these characteristics were present in the case I saw many

years ago, and the impression produced by them comes back
to me like a horrid spectre when I recall that scene.

I believe the disease, when fairly developed, is invariably
fatal, though others think that some few cases have recovered.
Such was the case till Pasteur came to the rescue.

Statistics.—The questions of—the number of rabid dogs
which have been observed and captured in a year in any com-
munity, the number of people who have been bitten by dogs,
rabid or not, and the number of persons who have died from
hydrophobia, are of the greatest interest.   Unquestionably,
the numbers of ascertained cases in the first two categories
have been enormously increased of late years.   That is to be
accounted for mainly by the fact that public attention has
been called to the question since the institution of the Pasteur
treatment.

With regard to the first question, the only source of absolute
certainty I can refer to is the Report of the Council of Public
Health in Paris.   The number of rabid animals reported was,
in 1883, 182; in 1884, 301; in 1885, 518; in 1886, 604; in
1887, 644; in 1888, 863.

I have no figures for the number of persons bitten, but
the reporter says:—"The number of persons bitten in the
above years, so far as known, follows nearly the same pro-
portions."

There is a very remarkable fact referred to in the report.
On the 8th of June, 1888, the Prefect of Police in the Depart-
ment of the Seine, issued a decree that for six weeks every dog
which was not muzzled or led by a string would be seized and
destroyed.   During these six weeks the persons bitten were
reduced to practically *nil*—and the number of cases coming to
the Pasteur Institute from Paris was greatly diminished—
and rose to the average standard after the decree was relaxed.

In Berlin, where rabies was very prevalent, a similar decree
has been in force for some time.   "Rabies has disappeared
from the tables of mortality, and in the national statistics,
which are about to appear, only four well established cases of
death from rabies will be found in the death register of the
German Empire."

I should here state that rabies and hydrophobia are used as
convertible terms—rabies usually applied to animals, hydro-
phobia to man—but it is the same disease.

With regard to the number of deaths from hydrophobia, we
can get, at all events, the minimum from the mortality tables
of different places.   The following figures are from the
Registrar-General's mortality tables:—

	England and Wales.	Ireland.	Scotland.	Total.
1880,	29	12	11	52
1881,	34	12	3	49
1882,	28	11	2	41
1883,	34	11	...	45
1884,	28	8	1	37
1885,	60	7	...	67
1886,	26	2	...	28
1887,	29	...	...	...

Twenty years preceding 1886, there were in England, Wales, Ireland, and Scotland, 796 deaths.

In Paris the deaths were as follows:—In 1885, 22; in 1886, 3; in 1887, 9; in 1888, 19.

I have before stated that rabies or hydrophobia, when fully developed as a disease, is fatal; but it is easy to understand why many persons, perhaps the majority, who are bitten by rabid animals do not get hydrophobia; they recover from the bite and they do not take the disease. When a rabid animal bites through the boot or clothing, the viscid mucus is wiped off, and the tooth is cleaned while penetrating, before it reaches the skin. But when the bite is on the hand or face, or any exposed surface, the probability of rabies ensuing is much greater, and the period of incubation is shorter, and so is the available period for preventive treatment.

I shall make no speculation as to the effect of the state of health and natural constitution of the bitten person on the period of incubation or capacity to resist altogether the rabic poison, but just as in the case of small-pox or typhus fever, I presume there must be persons, so to speak, proof against it. And if so, these cases must be taken into account in any estimate of treatment.

I shall now shortly describe the "Institut Pasteur;" then the mode of conducting the treatment; next the principle on which it is founded, and the means of applying the principle; and, lastly, the results so far as at present known.

The present Pasteur Institute is a large building, or rather a front and a back building connected by a corridor, situated on a large piece of land, so that there are gardens and grass plots, with numerous seats and benches, on all sides of the house. The front building is occupied on one side by M. Pasteur's residential rooms, &c., &c.; on the other, by a public reception-room, library, reading and writing rooms for members of the staff, and also for those young medical men who enter as students for post-graduate courses. They come from all countries; but the number admitted is limited

so as to make the instruction most practical. I may here mention that the work done in the "Institute" is not limited to the treatment of persons who have been bitten, but now includes researches into, and practical demonstrations on, bacteriology, and the preventive treatment of fowl cholera, and anthrax, &c. M. Pasteur's assistants, or rather colleagues, are men who have taken high positions in the Concours, and some of them are "*professors aggregés*" of the Ecole de Medicine. The institution now consists of two parts—one for the study and teaching of these subjects, by lecture, demonstration, and practical laboratory work, under the supervision of the lecturers, demonstrators, and tutorial assistants. The back building is occupied with the laboratories and lecture-rooms belonging to this section; but quite the half of the ground floor is devoted to the hydrophobia department, laboratories for the preparation of the fluids to be used, operating-room, waiting-room, clerks' rooms, offices, &c., &c.

In the vacant ground beside and behind the main buildings are a number of outhouses where the animals required are kept, one of which is devoted to rabbits in every stage of preparation, from the perfectly healthy, recently purchased in the public markets, to those in the act of dying of communicated rabies. I may here state that two or three rabbits are inoculated every day, so as to secure that at least one shall die of the disease every day, and so keep up a continuous supply of the material used in the treatment. Besides the rabbit-house, there is another for guinea-pigs and other small animals, and a row of dog kennels, with a separate compartment for each dog. In these kennels are kept the dogs which have been sent, suspected of rabies; and others, quite healthy, which are used for experimental testing, either to prove or disprove the rabic condition of those suspected, or to test the efficiency of preventive inoculation. These are stray dogs which have been captured by the police or sanitary officers, and sent to M. Pasteur instead of being destroyed.

The hour for the inoculation of patients is eleven, and before that time a great many persons have collected in the gardens and grounds, usually from 50 to 100. They are of all ages, from children in arms to old people, of all ranks, and from all nations. Indeed, when I was there, not the least interesting aspect of the crowd was the variety of national feature and costume.

As the hour drew near, they arranged themselves according to the order in which they would be called, those who would not be wanted at the first, sitting about on benches,

or walking up and down—many smoking cigarettes, to pass the time.

When a patient comes for the first time, he has probably been in waiting for some time, during which he has been taken to the clinical clerk, who enters in the journal full details, and asks from the patient a certificate from his surgeon, with an account of the state of the bite as first seen. The most minute inquiries are made as to the condition of the animal which gave the bite—and subsequent correspondence makes up for any deficiency. At the end of the examination, he is given an admission card, with his name, date, and the page of the journal, which becomes his number. He is then placed with the group which first gains admission to the general waiting-room.

This large waiting-room is like a booking hall at a railway station, in which there is a window opening into a ticket clerk's office. The new patient goes with his card to this window, and the clerk returns it along with a ticket in which the No. I is marked, to indicate that this is the first day of his attendance. Other patients get tickets with II or III, &c., on them, according to the day of their attendance.

The patients are then passed one by one through a turnstile into a second waiting-room. Each in turn goes to a table, at which a second clerk is seated with a book containing an alphabetical list of those who have come for treatment, and the clerk, taking the card and the ticket, consults his list to see if no mistake has been made as to the number on the ticket. This check is necessary to secure the absolute certainty of the proceedings, so that no one shall be inoculated with a wrong fluid. Having received back his card and number ticket, the patient goes to a corner of the room beside the door of exit, and there he uncovers a small part of the skin of his abdomen, and is introduced into the operating room. The operator is one of M. Pasteur's assistants, a registered practitioner of medicine, as M. Pasteur has never himself inoculated a human being, not having any medical qualification. The operator, with his assistant, sits behind a table, on which are placed a spirit lamp—an open glass vessel with antiseptic liquid kept hot by a lamp—and a number of glasses containing the liquid to be injected. This liquid is an emulsion made by rubbing a little bit of the spinal cord of a rabbit which has died of rabies into a small quantity of *bouillon*, the clear fluid of beef tea. Each glass has over its mouth a piece of bibulous paper, to prevent the entrance of dust, and is marked with a number, to indicate the strength of the emulsion. Two or

three hollow needles, fitted to little glass syringes, lie at hand
on the table.

A patient comes up to the operator, and as he reaches him
he nips up between his finger and thumb a small fold of the
skin of the abdomen ; or, if his or her hands are engaged in
keeping open the aperture in the garments, the operator nips
up a small fold. He then takes the syringe with the needle
attached, dips it into the hot antiseptic solution, and further
sterilises it by passing it through the flame of the spirit lamp.
He then passes the needle through the paper cover of one of
the glasses into the fluid, and takes up a few drops, pierces
the fold of skin, injects the fluid, and in a second or two all is
over for the day. The greatest precaution is taken to inject
each patient with fluid from a glass having the same number
as the patient's ticket.

I asked many of the patients if the injection gave rise to
any uneasiness, and I found only one, who said the prick of
the needle caused a stinging sensation, which lasted for a time,
but soon passed off. On further inquiries of the attendants
and some who had been in under treatment for two or
three weeks, I learned that occasionally there was a tingling
sensation in the limbs, which, however, did not cause any
trouble.

The patients then disperse till next day, except in the case
of those whose cases are considered so severe as to demand a
more active treatment, and they return for a second inocula-
tion of a stronger kind in the afternoon. This is called the
" intensive treatment."

The time occupied in the treatment is from fourteen to
twenty-one days.

It should here be mentioned that not every one who comes
with a story that he has been bitten by a rabid animal is
admitted to treatment. Some reasonably sufficient evidence
of the animal being rabid is required. First, if possible, the
animal itself should be sent to the Institut Pasteur. If this
cannot be done, its head and neck should be sent. If not, the
testimony of some one sufficiently skilled in animals, such as
a veterinary surgeon or farrier, must be produced before the
case is admitted for treatment.

Those who have been bitten on the face, hands, or other
exposed parts, by animals which have been proved to have, or
exhibited symptoms of, an intensified form of rabies, are con-
sidered extreme cases, and as in such instances the period of
incubation is always shorter than in others, the intensive form
of treatment is begun at once, and pushed so as to complete

the necessary inoculations within fourteen days. And it is just in such cases, and especially if treatment has been delayed for forty-eight hours, that the Pasteur method might be expected to fail. Hence the importance of the most reliable clinical history of each case.

It is not to be supposed, however, that M. Pasteur declines to allow any patient to be inoculated, unless he brings some evidence that his bite has really been given by a rabid animal, because he has any fear of the protective inoculation proving dangerous or fatal. On the contrary, persons who have not been bitten at all have been inoculated without any harm. And some, I believe most, of the attendants at the Institute have been so inoculated, and not one of them has ever suffered any inconvenience from the proceeding. Still, the rule at the Institute is that there must be a fair probability that the animal which gave the bite was rabid.

I must now shortly explain the principle of the Pasteur treatment, which was not perfected till after the most laborious research. It was the thoughtful elaboration of the kind of treatment by which he was able to control and obviate fowl cholera. Having, after repeated trials, been able to see and separate the microbe of this disease, he passed it through a series of cultivations in beef jelly till it became innocuous when injected into a fowl—and he further found that when a fowl so inoculated was exposed to the natural contagion of the cholera it was proof against it. Inoculations on a large scale were instituted, and thousands of fowls in districts subject to fowl cholera were so dealt with, and in the end the disease disappeared from those parts of the country.

In 1880, M. Pasteur conceived the possibility of dealing with rabies in the same sort of way. But though he knew that the viscid mucus of the mouth of a rabid dog contained the specific virus, he was not able (and no one has yet been able) to recognise and isolate any microbe which could be cultivated and so attenuated into safety for use. But he attempted to cultivate a modified virus in the body of an animal by inoculating rabbits with the viscid mucus from a rabid dog. However, the results were so uncertain and different, that he gave up the attempt in that way. But it occurred to him that since the symptoms all pointed to some disease of an irritating kind affecting the nerve centres, it was through these organs that success might be achieved.

Accordingly, he injected rabbits subcutaneously with an emulsion made with the brain substance of an animal which had just died of rabies, and in a short time the disease was

established and proved fatal. He also found that there was a difference in the rapidity with which the disease showed itself, according to the part of the rabbit operated on, the nearer the head the more rapid.

The third stage of experimental research was to expose the brain of a rabbit by removing a bit of the skull with a trephine, and to inject the nerve substance directly from a recently dead rabid animal. The rabbit rapidly recovers from the operation, and then in from fifteen to eighteen days dies of rabies. If proper precautions are taken, these results are practically invariable. Still they were not absolutely fixed, and the problem was first to find a virus of a sure and certain strength. After a long series of experimental researches it was found as above, that a rabbit injected in the brain directly from the brain of a dog which had died of rabies, dies after an incubation of sixteen or eighteen days. If a second rabbit is injected in the same way from the spinal cord of the first, it dies after say sixteen days of incubation, and so on from rabbit to rabbit, with a gradually diminishing period of incubation, till after about one hundred successive inoculations the period goes down to six days, after which it never changes, so that it became known how to obtain a virus causing death after a fixed period of six days. This is called the "fixed" virus, and is the only medium used for preventive inoculation, at least in a form modified as follows.

This powerful "fixed" virus, certain to cause death in six days if so used, had to be attenuated so as to allow of its use. How was this to be done without altering the essential nature of the virus? It occurred to M. Pasteur that if a spinal cord containing this virus could be kept a certain number of days without contamination, it might possibly be so intrinsically altered as to lose a part of its virulence, and so it proved to be.

A spinal cord was taken and suspended in a glass jar, at the bottom of which was placed a piece of caustic potash to absorb all the moisture, and so cause the gradual drying of the nerve matter. The temperature was kept at 25 C. The mouth of the jar was stopped with a plug of carded cotton to keep out all dust. After it had been kept one day a portion was injected into a rabbit, which died in six days. After two days keeping, a rabbit injected with it died in seven days, and so on, till after the cord had been kept fourteen days the rabbits injected with it did not die. So that here was a method of gradually attenuating the virulence of the fixed six day virus.

But now he reversed the process, and beginning with a

fourteen day cord, he day by day injected the same rabbits with gradually intensified virus, when, to his delight, he found that when he reached the fixed and fatal six days' virus, the rabbits did not die, but seemed to have been protected.

The same experimental process was repeated in dogs with the same result.

Finally, he put the treatment to a crucial test. He procured a number of dogs, and most of them he submitted to protective inoculation from rabbits' cords. Some he left unprotected. Both series were tended and fed in the same way. At last, on the arrival of a dog with rabies in the most marked form, immediately after its death he inoculated all the dogs with substance directly from its spinal cord. The protected dogs showed no symptoms of illness; every one of the others died of well marked rabies.

Such an example of inductive science research is almost unknown.

And so the matter remained till in 1885 the boy Joseph Meister, aged 9 years, was brought to the Rue d'Ulm, bitten by an undoubtedly mad dog in fourteen different places, hands and legs. If ever a boy was doomed to die of hydrophobia, here was one. Medical consultants from the nearest hospitals were summoned and pronounced the case hopeless, and urged a trial of what had saved dogs. The inoculations were begun on the 8th July, and continued for three weeks. The boy got well, and is still alive.

What was done in July, 1885, has now been repeated in hundreds of cases, so that the time has now arrived when a definite conclusion can be come to.

I now come to the important question—" To what extent has the Pasteur treatment saved the lives of those who otherwise would have died of hydrophobia ? "

The reply to this is surrounded with some difficulty :—

1. Many persons have gone to the Institute and been treated who have been bitten by animals not rabid ; at least the evidence of their being so has been defective.

2. Many persons who have been bitten by animals proved to be rabid, have been so bitten that the virus has been prevented reaching the wound by the clothing.

3. A few, probably a very few, so bitten are by constitutional condition not liable to the malady.

Excluding such cases, there remain a sufficiently large number who, in all probability—almost with certainty—would have got hydrophobia, and so died.

Any statistics that I could produce from a personal study

of the figures to be seen in annual reports and papers on
hydrophobia would have no authority compared to the
exhaustive judicial investigations of the committees appointed
in 1887—one by the Local Government Board, consisting of
Sir James Paget; Dr. Lauder Brunton; Dr. George Fleming,
V.S.; Sir Joseph Lister; Dr. Richard Quain; Sir Henry
E. Roscoe, F.R.S.; and Dr. Burdon Sanderson; with Mr.
Victor Horsley as Secretary; the other a Committee of the
House of Lords.

The professional committee, first named, issued a report,
from which the following passages are taken:—

"The personal investigation of M. Pasteur's cases by the
members of the committee was, so far as it went (90 cases
were examined into), entirely satisfactory, and convinced
them of the perfect accuracy of his records."

Then follow statistics, from which the following figures are
taken:—

"The lowest rate of mortality in persons who have been
bitten by animals believed to be rabid, and have not been
treated, is five per cent." "Between October, 1885, and
the end of December, 1886, M. Pasteur inoculated 2,682
persons." "Of the whole number, at the rate of 5 per cent,
130 should have died." "At the end of 1886 the number of
deaths was 31, including 7 bitten by wolves (the most fatal
kind of bite), and in 3 of whom the symptoms of hydrophobia
appeared while they were under treatment, and before the
series of inoculations were complete. Since 1886 two more of
those inoculated in that year have died of hydrophobia."

"Making fair allowance for uncertainties, and for questions
which cannot now be settled, we believe it sure that, excluding
the bites from rabid wolves, the proportion of deaths in the
2,634 persons bitten by other animals was between 1 and 1·2
per cent—a proportion far lower than the lowest estimated
among those not submitted to M. Pasteur's treatment, and
showing, even on this lowest estimate, a saving of not less
than 100 lives."

"The evidence of the utility of M. Pasteur's method, indi-
cated by these numbers, is confirmed by the results obtained
in certain groups of cases."

"Of 233 persons bitten by animals in which rabies was
proved—either by inoculation from their spinal cords or by
the occurrence of rabies in other animals, or in persons, bitten
by them—only 4 died. Without inoculation it would have
been expected that at least 40 would have died."

"Among 186 bitten on the head and face by animals in

which rabies was proved by experimental inoculation, or was observed by veterinary surgeons, only 9 died, instead of at least 40."

" From the evidence of all these facts, we think it certain that the inoculations practised by M. Pasteur on persons bitten by rabid animals have prevented the occurrence of hydrophobia in a large proportion of those who, if they had not been so inoculated, would have died of that disease."

From such conclusions, formed by such a committee after the most careful investigation, it is impossible to escape. And their verdict must be accepted without reservation.

I may add that a careful perusal of the official reports for the years 1887 and 1888, presented to the Prefect of Police for the Department of the Seine, on the cases of rabies which have occurred in man during these years, still further corroborates the conclusions of the report by the British Committee.

The following figures from the report give the latest recorded results :—

In the year 1887, the number of persons from the Department of the Seine treated in the Pasteur Institute was 306, of whom 263 were bitten by animals ascertained to be rabid. Of these 3 died. During the same year 44 persons were reported to the police as bitten. but were not subjected to treatment, and of these 7 died.

In 1888, 383 persons from the Department of the Seine, of whom 336 were bitten by animals known to be rabid, were treated. Of these 4 died. During the same year, of 105 persons reported as bitten but not treated, 14 died.

Thus the mortality of persons bitten but not treated was, in 1887, 15·90 per 100 ; in 1888, 13·33 per 100. Of persons treated in 1887, 1·14 per 100 ; in 1888, 1·19 per 100.

From 1st November, 1888, to 1st November, 1889, the number of persons bitten and treated at the Pasteur Institute was 1,830. Of these 11 died, being 0·6 per cent. Of these 11, 4 died during the treatment, and excluding these 4, the mortality is 0·3 per cent.

It is no valid objection that in some cases cure has not followed inoculation. The same can be said of every remedy, and every form of treatment, that ever has been used for any disease which will prove fatal if not arrested.

I have purposely avoided all discussion as to the propriety or impropriety of operating on the inferior animals, with the view of causing them to die of a specific disease, in order to obtain from their bodies the only material which has ever

been successfully used as a remedy for this frightful malady.
That is beyond the scope of my paper.

The whole subject may be summed up in a few sentences :—

Hydrophobia causes the death of a number of persons every
year.

It arises primarily, directly or indirectly, from the bite of a
rabid dog.

The disease when developed is fatal.

The treatment introduced by M. Pasteur has been so success-
ful as to come under the designation of a reasonably probable
cure ; perhaps a nearly certain cure, if resorted to within a
short time of the bite.

And the inevitable conclusion from these propositions is,
that every possible means should be taken to encourage and
promote the Pasteur treatment of rabies, so long as it continues
to show itself.

How that is to be done it is not so easy to determine.

Not many inoculating stations would be required—probably
one in London would suffice for Great Britain and Ireland.
It could be reached within twenty-four, or at most forty-eight
hours after the bite, from most parts of the kingdom.   The
Local Authority in each district might be empowered to
provide the means of travelling and stay in London to those
who are unable to afford the cost.

If it should be considered, as most probably it would, that
the number of cases demanding treatment was too small to
authorise the killing of so many animals as would be required
to keep up a constant supply of the material for inoculation
in all its stages, so as to be ready to be used without delay,
then as Paris is only 9 hours from London, and as that is the
quickest route from any part of this country, all that would
be required would be to provide for the immediate journey to
Paris.   One or two members of the Corps of Commissionaires
or of an Ambulance Society might be instructed so that they
could act as conductors to those who were unable to travel
without such help ; and, in the case of young persons, might
undertake to have charge of them while in Paris, without the
necessity of a father or friend going with them.   If this latter
plan should be adopted, our Government should provide a
handsome subsidy to the Pasteur Institute in consideration of
its undertaking the treatment of British subjects.   All this
could be done at comparatively little cost, and it would relieve
our countrymen from the feeling of taking undue advantage
of the splendid generosity which has been shown by M.
Pasteur.

But, while I advocate the systematic adoption of some plan by which persons bitten by dogs presumably rabid should be sent off as soon as possible to Paris, I would still more unhesitatingly advocate the passing of some legislative measure for dealing with dogs in such a way as to stamp out the disease. It can be done; it has been done in Berlin and elsewhere, and it might be done in this country. The recent muzzling order has practically abolished dog-bites in London; and if it were extended over the country, and continued for some time, hydrophobia would soon disappear from the tables of mortality.

SOME LESS COMMON CAUSES OF MENORRHAGIA, WITH ILLUSTRATIVE CASES.*

By J. NIGEL STARK, M.B.,

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By the word "menorrhagia" is meant a profuse flow of blood from the uterus, occurring at the menstrual period and connected with the menstrual process; "metrorrhagia" means intermenstrual hæmorrhage, unconnected with menstruation. These two conditions, however, so frequently coexist or pass into one another, and thus become indistinguishable, that, practically, we can seldom be strictly accurate in our employment of the terms; and in this paper we shall use the word "menorrhagia" to indicate any profuse uterine hæmorrhage unconnected with pregnancy.

The uterus is the only organ in the body from which blood flows as the result of a normal physiological process; and as, therefore, it is naturally in a state of instability, subjected to regular and well-marked waves of increased blood supply, it can be readily understood how much more liable it is to bleed unduly under the influence of a pathological stimulus than other organs are.

Bleeding from the uterus is not a disease, but merely a symptom of some pathological condition, and may therefore, as such, come under the notice of any practitioner of medicine. Its effects are often most alarming, and frequently demand prompt treatment. A thorough knowledge of its varied causes, and of the methods of treatment adopted, is, therefore, of the highest practical importance to all of us; and I require

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to offer no apology for bringing this subject before you for consideration. In the treatment of a case of menorrhagia, it is necessary to keep our minds open to all possible causes, as no one routine or empirical method of practice can ever hope to be uniformly successful. This, of course, holds good regarding all treatment ; and the more we learn to appreciate the influence which disease of one organ, or set of organs, wields over the functions of others, so much the more successful will be our treatment.

Menorrhagia may be produced by either local or general conditions ; in other words, it may be dependent upon disease existing in the uterus, or upon diseases in other organs which produce, secondarily, an excessive flow of blood to the uterus. This is a classification which should never be forgotten.

The local causes of menorrhagia are well known to you. Perhaps the commonest are fibroid tumours, polypi, subinvolution of the uterus, and chronic granular endometritis. In order to ascertain whether any of these conditions be present, we require to thoroughly explore the pelvic cavity and examine its contents, having recourse to the bimanual examination and the employment of sounds, curettes, and other instruments in the furtherance of this object. As a general rule, such cases can be readily enough diagnosed, and frequently successfully treated. We shall, therefore, meanwhile dismiss them from discussion, and refer more particularly to some less usually recognised forms of excessive uterine hæmorrhage due to general causes.

Before proceeding further, however, we must determine and define what constitutes pathological hæmorrhage from the uterus. We must take normal menstruation as our standard, the leading features of which are thus described by Barnes :— " Fluid blood, somewhat glutinous, is discharged gradually to the amount of two to four or six ounces, lasting over a period of two, three, or four days, at regular intervals of twenty-eight days or nearly so, beginning at the age of twelve, thirteen, or fourteen, and lasting to forty-five or forty-eight." When from this standard marked deviations occur, it is highly probable that pathological factors are at work, although we must also bear in mind the extensive hæmorrhages which constitute the regular menstrual flow in some women.

By narrating a case I shall most clearly illustrate the effect which may be produced upon the uterus by disease situated in a distant organ.

Mrs. E., 36 years of age, consulted me on account of uterine hæmorrhage recurring too frequently and continuing for too

long a time. She was pale and delicate-looking, having the worn, fatigued appearance, so generally seen in patients suffering from a long continued draining of blood from the system. She informed me that the menorrhagia had existed more or less severely for a year, and that she had consulted several medical men without benefit. She had one child, 4 years of age, and her confinement had been normal, a complete recovery also taking place. For a considerable time she had suffered from slight cough and breathlessness upon exertion, and during the previous four months she had noticed that her ankles were swollen, especially in the evenings. The hæmorrhage occurred about every three weeks, and generally lasted from six to nine days. After any exertion more than usually severe, there was also a certain amount of discharge between these periods.

Upon examination of the pelvic organs I could detect nothing which seemed to account for this state of affairs. The uterus appeared to be slightly swollen, but otherwise was normal, and there was nothing in the condition of the other pelvic organs which threw light upon the cause of the uterine hæmorrhage. I accordingly made further inquiries as to past history, and investigated the case in greater detail, thereby eliciting the fact that at the age of 24 the patient had suffered from an attack of acute rheumatism. Upon examination of the heart, I discovered the presence of a rough presystolic murmur over the mitral area, along with accentuation of the second sound over the pulmonary area. There were râles and coarse crepitations heard in the lungs, and the pulse was weak and very slightly irregular.

The result of this investigation was to throw a flood of light over the case, and upon more careful inquiries being made, the patient stated that she also suffered from indigestion and occasional " bilious attacks." It was now realised that the menorrhagia was only one of a number of symptoms resulting from the stenosis at the mitral orifice, and the treatment resolved itself chiefly into acting upon the heart and general circulation. I ordered that as much rest as possible should be taken during the time that the hæmorrhage occurred, and gave 15 minims of tincture of digitalis three times a day. The bowels were regulated by the use of an aperient mineral water. No local treatment was directed to the pelvic organs. The result was that the heart's action rapidly improved, and the various morbid symptoms, including the menorrhagia, disappeared. With occasional intermissions Mrs. E. has continued to take the digitalis pretty regularly, and she still keeps well.

Of course, in cases such as this, we cannot expect cure in the highest sense of the word ; the original cause of the trouble we cannot entirely remedy, and unless treatment is continued the patient is liable to suffer at a future time.   But we can most certainly relieve the distressing symptoms, restore a large amount of health, and prolong life, and these are no mean results.

This appeared to me a most interesting and instructive case, illustrating, as it did, the dependence of a disordered condition of the uterus upon a pathological state of the general circulation.   So long as the menorrhagia was considered a disease *per se*, for which the usual routine method of treatment was applicable, a successful result could only be a matter of chance, but whenever the cause was clearly defined and suitable treatment applied, the distressing symptoms were speedily relieved.

Looking at this subject from a theoretical point of view, I should imagine that this form of menorrhagia, due to cardiac disease, is not uncommon, or at least is more common than it is usually thought to be.   I have seen several other cases, and as regards this point, I ask the opinion and seek the experience of other Fellows of the Society.   Acute rheumatism is a very prevalent disease, and unfortunately only too frequently produces valvular disease of the heart.   Take, then, the case of women about middle age, who, for a considerable time, have suffered from this defective valvular action ; it not infrequently happens, as we would naturally expect, that at this critical period a certain amount of cardiac failure arises.   Of all the numerous secondary morbid phenomena resulting from the impaired circulation and the backward blood pressure, menorrhagia is sometimes one of the most evident and dangerous.

Of course, I can readily perceive that uterine hæmorrhage in cardiac disease may be beneficial in certain cases, and if it be not too excessive.   Sometimes it may prevent undue congestion in other organs, as by relieving vascular tension the uterus then acts as a safety-valve.   But when the hæmorrhage becomes excessive or produces morbid phenomena, it must be checked if possible.

In order that we may clearly appreciate and understand the various relations of this subject, let us briefly recall to our minds the leading features of the blood circulation of the uterus.   There are two sources of supply : the ovarian and the uterine arteries.   The ovarian artery of each side rises directly from the aorta ; in the pelvis it passes between the layers of the broad ligament, and, following a tortuous course, supplies the uterus and anastomoses with the uterine artery.   Each

uterine artery springs from the anterior division of the internal
iliac and passes downwards and inwards towards the cervix
uteri between the layers of the broad ligament, running in an
exceedingly tortuous manner to anastomose with the ovarian
artery. Whilst in contact with the lateral border of the
uterus, each uterine artery gives off numerous spiral branches
which, passing into the tissue of the organ, are called the
" curling arteries."

The blood is returned from the uterus by a plexus, the
uterine, which communicates with another, the ovarian or
pampinniform, lying between the folds of the broad ligament.
The uterine veins lie in the outer muscular coat, and run
longitudinally; in the middle layer they open into large
sinuses, surrounded by unstriped muscular fibre, with which
the capillary vessels communicate. Ultimately the uterine
plexus opens into the ovarian veins, of which the right passes
into the inferior vena cava, and the left into the left renal
vein. It is important to bear in mind that there is a connec-
tion between the pelvic veins and the portal venous system
through the superior hæmorrhoidal vein passing into the
portal system, and the hæmorrhoidal, vaginal, and other
plexuses opening into the internal iliac vein, which joins the
inferior vena cava. Another point in this connection which
should be remembered is that the veins of the various plexuses
are valveless, as are also the inferior vena cava, the portal
vein, and the external and common iliac veins. And, in
addition, the influence of the erect attitude should be borne
in mind. This was ably pointed out by the late Dr. John
Wilson, of this city.

Let us now briefly recapitulate, in tabular form, the leading
characteristics of the uterine circulation :—

1. The blood supply is abundant, and conducted by means
of arteries running in a tortuous and spiral manner both
outside and within the substance of the uterus.

2. There are large venous sinuses lying in the uterine wall,
and surrounded by unstriped muscular fibres.

3. The sinuses open into plexuses, which ultimately pass
into the inferior vena cava by means of the ovarian veins, the
right opening directly into it, and the left through the medium
of the left renal vein.

4. There is a communication between the pelvic veins and
the portal system.

5. The veins are valveless.

6. The influence of the erect position upon the uterine
circulation must be borne in mind.

When these facts, with their relative bearings upon one another, have been carefully studied, the excessive liability of the uterus to become congested, and the difficulty of re-establishing a healthier condition, can readily and clearly be understood.   Take, for example, a case such as I have narrated, where, for a number of years, an obstruction to the circulation had existed.   The general venous system having become overfilled, the uterine veins had, of course, partaken in the distension, to which, as we have seen, they are specially liable from the following circumstances : — (1.) That they are valveless, and communicate with valveless veins ; (2.) that they open into large sinuses which practically act as reservoirs ; (3.) that they are situated at a low level in the blood column, and are thus affected mechanically by gravitation ; and (4.) that the tortuous and spiral arteries effectually prevent any backward flow into them.

The treatment of such cases resolves itself into treatment of the circulation.   The patient must have complete rest in the recumbent position, and this by itself generally acts so beneficially that no other treatment is required until the bleeding ceases and the case can be thoroughly investigated. As soon as possible a heart tonic should be administered, either digitalis or strophanthus, and it should be continued for a lengthened period.   Of course the menorrhagia may require immediate treatment before a diagnosis of its cause has been made, the present danger to the patient being serious. For this purpose, in addition to rest and quiet, a hæmostatic should be given, and that which I have found to be of most service is dilute sulphuric acid.   Later on it may be combined with nux vomica and ergot.   In all cases the bowels should be kept unloaded by means of saline cathartics.   When the heart's action has improved, and the circulation is unembarrassed and steady, moderate exercise in the open air should be advised, and a nourishing but unstimulating diet should be taken.   In this stage, also, debilitated and anæmic patients derive much benefit from iron and vegetable tonics.

We must, however, pass from the consideration of this particular subject to another case illustrative of uterine hæmorrhage, resulting from a cause altogether different to that which has been under discussion.

Mrs. A., when first seen by me about three years ago, was 47 years of age, had been married over twenty years, but was childless, menstruation having been always regular and normal in every respect.   Latterly, however, she had suffered from faintness, flushes of heat, indigestion, perspirations, and other

symptoms, usually occurring at the menopause, and to which I ascribed them. A course of mild purgatives and tonics, together with moderation in diet and attention to general hygiene of the system, considerably relieved the symptoms. A few months later I was again asked to attend on account of severe sickness and vomiting, with tendency to faintness. This condition had lasted for a few days, and was explained by the patient as having resulted from some indiscretion in diet; but from what the husband told me, I found that for a few months my patient had fallen into dissipated habits, and that her present illness was simply the result of a heavy drinking bout. Upon questioning her, the fact was elicited that for the past four months the menstrual flow had been exceedingly profuse, and had appeared every fortnight or three weeks. I felt confident that this was the result of portal congestion, but in order to be certain that no local disease existed, I made a careful examination; nothing, however, was found to be abnormal in the condition of the uterus. The chief symptoms complained of were those of chronic gastric catarrh, along with dull pain over the liver. The complexion was sallow, the urine contained urates, and strength had been failing. Though no positive alteration in the size of the liver could be detected, yet the diagnosis seemed clearly to be that of early cirrhosis of the liver, which was producing portal obstruction owing to formation of new connective tissue, this leading in its turn to uterine congestion and menorrhagia. As I considered that the patient was meanwhile suffering from an attack of acute hyperæmia of the liver and acute gastric catarrh, treatment was directed to the relief of their symptoms. Stimulants were rigorously excluded, and the diet ordered was light and nourishing. A calomel purge was given, followed by a saline draught, and turpentine stupes were applied over the liver and stomach. Later on chloride of ammonium was found serviceable, and along with iodide of potassium and sulphate of sodium, was continued for several weeks. So long as the patient was under supervision, and abstained from alcohol in every form, she remained well; but when restraint was removed, her tippling habits were speedily resumed, and my next attendance was on account of an attack of jaundice. The conjunctivæ and skin were stained yellow, the urine contained bile-pigments, and all the other well known symptoms were present. The liver was increased in size, and could be felt below the lower ribs and across the epigastrium. Upon pressure, tenderness was complained of, and there was a sense of fulness and oppression over its area.

But in addition, and this is a fact to which I desire to direct attention, there was profuse uterine hæmorrhage which continued for about a fortnight, only subsiding gradually as the jaundice disappeared. There can be no doubt that this resulted from engorgement of the portal vessels, this, in its turn, leading to a state of engorgement of the uterine mucous membrane. As a matter of fact, the menorrhagia disappeared gradually, together with the hyperæmia of the liver, and the treatment was directed solely towards the relief of the hepatic congestion and the resulting jaundice. Free action of the kidneys and bowels was maintained in order to provide for the elimination of the bile and to deplete the portal circulation. Under this and other appropriate treatment the condition rapidly improved, and the succeeding one or two menstrual periods were only slightly more profuse than normal. Mrs. A., however, became an inmate of a home, and I have not seen her for a few months, but hear that she keeps " well."

Another similar case has quite recently come under my notice. In the beginning of October I saw, for the first time, a lady who complained of sickness, vomiting, disinclination for food, and other symptoms of gastric disturbance. In this case there is also a history of over indulgence in alcoholic stimulants. The patient is 43 years of age, and for the past two or three years has undergone much worry of mind and fatigue of body. This has led to frequent recourse to stimulants, until the habit of constant tippling became fixed. When I saw her for the first time, there was a complaint of pain over the liver, whose lower border could be distinctly felt extending below the ribs. Patient had noticed that of late the menstrual discharge had been becoming more and more profuse, amounting, as she herself said, on the last two or three occasions, almost to a " flooding," upon two occasions continuing for three weeks. The heart's action was weak, but there was no valvular lesion ; no albuminuria was present, and no disease could be detected in the pelvic organs. In this case, forming a diagnosis both by a process of exclusion and by a consideration of the actual facts present, there can be no doubt that the excessive uterine hæmorrhage is the result of a congested condition of the pelvic venous system produced by an enlarged liver. The treatment has been conducted on general principles, attention being directed chiefly to the improvement of the condition of the stomach and liver. Alcohol has been strictly forbidden. Patient's general condition has been in consequence very much improved, and what is of special interest is, that the last menstrual flow was

only slightly more profuse than normally it should be, and was present during only five days.

Space and time permit merely a brief allusion to one other factor in the production of excessive uterine hæmorrhage, but I believe it to be an exceedingly common cause. This is, a chronic state of constipation, which, on account of the obstruc-tion which it leads to in the venous circulation of the pelvis, is a frequent cause of congestion of the uterus. I have observed this most especially in young unmarried women. The knowledge of this fact is exceedingly useful in practice, and many cases of menorrhagia in girls are curable by means of the administration of purgatives. Frequently, in addition to the habitual constipation, another cause exists—viz., tight lacing. To enter fully into this much disputed subject would be too great a task in this paper, and would lead to endless discussion. But my firm conviction is that habitual constipa-tion and tight lacing frequently produce a vast amount of pelvic congestion—uterine, rectal, ovarian, &c. I have observed it arise in strong-looking country girls who had come to the city as dressmakers and shop assistants. There is frequently considerable dysmenorrhœa co-existing, and this affection also often becomes greatly relieved by attention to the state of the bowels and avoidance of undue constriction of the waist. In reference to this subject, I have lately read with great interest a paper to which my attention had been directed. It was published by Professor Cleland, in 1880, in the *Glasgow Medical Journal.* The special value of the communication is due to the fact that the actual conditions produced by tight lacing upon the pelvic circulation were clearly demonstrated by dissection and by the injection of veins in a female subject. The ovarian veins were nearly a quarter of an inch in diameter, and there was also exhibited " a remarkable varicose arrange-ment of veins, greatest round the immediate site of the ovary, where they formed a mass the size of a large nutmeg, and extending in the broad ligament to communicate freely with the veins of the uterus, which were also greatly enlarged." The uterine walls were thicker than usual. All the other pelvic viscera presented a congested appearance. The liver was found " not only dark with blood, but it had on the right a sulcus caused by a fold of the diaphragm ; and on the upper surface a constriction about two inches broad, of paler colour than the rest, in which a number of vessels belonging to the substance of the organ could be seen enlarging as they passed backwards. . . . Plainly the patient had indulged the bad habit of tight lacing to a destructive extent." Foerster

(*Handbuch d. Pathol. Anat.*, 2te Aufgabe, ii, 392) remarks
that hyperæmia of the ovary sometimes is " a consequence of
obstructed venous flow in heart disease ;" and Cleland justly
says that if this is the case, " obviously obstruction by com-
pression of the liver will be at least equally potent ; and if
one takes into account the notorious effect of obstructed portal
circulation in producing piles, one may readily see, illustrated
by this case, the far-reaching, demoralising effect which tight
lacing may have, by causing congestion and irritation of the
pelvic viscera." I am in the habit of prescribing cascara
sagrada in such cases of chronic constipation, and generally it
acts admirably. Small doses, 10 to 20 minims three times a
day, a little before food, should be given ; and if regularly
continued, a better action of the bowels is soon established.
The dose may gradually be diminished until the drug is dis-
continued altogether. An occasional saline helps to unload
the pelvic venous system. The best are the Hunyadi Janos
and the Frederichshall waters ; a large wineglassful of either
of them should be taken in hot water early in the morning.
Other measures for the treatment of chronic constipation may
require to be employed, but it is unnecessary to discuss them
meanwhile.

Let me add, in conclusion, that one important lesson which
the study of the subject under consideration enforces is the
necessity of constantly bearing in mind the complex ana-
tomical, physiological, and pathological relationships of the
human body.

AUGUST MARTIN AND OVARIOTOMY.

By JAMES K. KELLY, M.D., F.F.P.S.G.(Exam.),
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Martin, of Berlin, is gradually becoming known as one of the
chief living gynæcologists, and as the distinguishing features
of his work are simplicity and directness, it may be interesting
to describe it, at least in outline. It is at any rate important
that general surgeons in our own country should be able to
compare their methods in the department of gynæcology with
those of one who confines himself exclusively to that depart-
ment, and who is now recognised not only as the bold operator
which he was once supposed merely to be, but also as an
assiduous student of his subject, ever open to the influence of
new and progressive ideas.

In the few weeks I spent in Berlin in the summer of this year I saw a great deal of his work, both in the every day treatment of the ordinary cases that occur in every women's dispensary, and in the major operations which test to the utmost the resources of the surgeon ; and it is with regard to one of these that I wish specially at present to write.

It will be necessary, however, to inform some, at least, of my readers that Martin has a hospital of his own, where he receives patients who pay charges varying according to the rooms they occupy and the attendance they require. In this hospital he has two operating rooms, one of which is confined to laparotomy cases, while in the other he performs all the operations in which antisepsis cannot be effectually observed, such as operations on the vagina and on the uterus per vaginam, the chief of the latter being vaginal extirpation of the uterus —a beautiful and often effective operation as done by him for carcinoma. In these two rooms, beginning perhaps with two or three laparotomies, Martin often spends the whole forenoon —from 8 A.M. till noon—going through an amount of work which only his splendid physique could sustain, and going through it with a patience and care, and especially with a thoroughness, which is in the highest degree admirable. It might excite the envy of any surgeon in this country to see Martin with his four assistants, and his ever ready Frau Horn, passing case after case under their hands, doing what is necessary for each without any external interference, and doing it with an admirable common sense which puts every detail in its proper place and proportion. My own feeling often was that thorough work such as I saw in Martin's Anstalt was well worthy of imitation, and might with much benefit be imitated here.

Perhaps even still more worthy of imitation was the care bestowed in diagnosis ; and it was a constant surprise to me to note with what accuracy every circumstance in each case was appreciated. Indeed, I thought even more admirable than his operative methods the clear limits Martin always laid down to himself between what he knew and what he knew not in the case before him. Here, much more than in his operations, his knowledge was put to the test. In the latter a certain boldness and readiness of resource might go far to ensure success, but in diagnosis his science as well as his insight was displayed. Nor were his examinations made with the roughness I have sometimes heard attributed to him. Far from it. Every consideration was given to the patients' feelings, and when an exhaustive examination was necessary,

as in cases likely to require operation, Martin always con-
ducted it "under narcosis." Over and over again, in speech
and writing, he has insisted that only in this way can a
complete examination be satisfactorily made.

In ovariotomy his procedure is marked by an extreme simpli-
city. The purpose of the operation is attained in the directest
way possible, and often with astonishing speed.   Martin's
principle seems to be, that while all haste is to be avoided, the
abdominal contents must be exposed as short a time as possible.
And out of this principle his method naturally springs.

In order to describe the operation as performed by him, it
is necessary to take the various stages separately.   These
are—

1. The preparation of the patient.

2. The preparation of the rooms, the assistants, instru-
ments, &c.

3. The table and position of the patient.

4. The operation itself. (*a*) The abdominal incision ; (*b*) the
turning out of the tumour ; (*c*) the separation of the tumour ;
(*d*) the toilet of the peritoneum ; (*e*) the closure of the
abdominal wound ; (*f*) the dressing.

5. The treatment after the operation.

In describing these stages I shall use pretty much his own
words, seeing that his book is not yet accessible to English
readers, though he expected it to be so in the autumn of this
year. When it does appear, it will be found well worth the
study not only of specialists, but of general surgeons.   In
several details, however, his procedure has already changed
from that of two and a half years ago, when the second edition
of his book appeared.

1. The patient has a bath in carbolic acid solution the
evening before operation. The vagina is then thoroughly
disinfected.   Again, when chloroformed and lying on the
operating table, the abdomen is thoroughly washed with
sublimate solution (1 : 2000).

2. The walls, floor, and all the contents of the room are
thoroughly washed with some disinfectant. The air is also
saturated with disinfectant spray which, however, is discon-
tinued some time before and during the operation.

The instruments, sponges, &c., to be used, are used only for
one operation. They are washed and laid in a disinfectant
solution, the metal instruments being first brought to a red
heat in a suitable stove.

The operator himself and all present must come fresh from
a bath and wear fresh clothes—the hands especially, imme-

diately before the operation, being carefully washed anew in a disinfectant solution.

Spectators, as well as assistants, are required to strip off everything to the shirt and trousers, ties and braces being especially objected to.

3. The table is constructed of metal, and can easily be kept aseptic. Below the loins of the patient is a hinged part which can be let down when the abdominal bandage is to be applied, so that the woman is not disturbed in the bandaging. The table is short, the legs of the patient hanging over the end and resting on the operator's knees, while he operates sitting between them.

4. (*a*) The patient being in a suitable position, narcotised, catheterised, and disinfected, the abdomen is opened in the linea alba. The incision Martin makes is a free one. He describes it in his book as 10 to 15 cm. (4 to 6 inches) long, but in each case the incision is of a length to suit its own necessities. " Incisions that are too short may hamper the operator greatly." The last sentence, I think, applies to most abdominal sections in this country. It seems to be a boast with some through how small an opening they can remove a tumour or an ovary. Repeatedly also after unsatisfactory feeling in the pelvis with the fingers the abdominal wound has to be enlarged. Martin's plan admits not only of feeling, but of sight being used if necessary in the operation. The bleeding points in the edges of the abdominal wound are usually secured by Wells' or Péan's forceps, but Martin considers they may be disregarded. The use of these instruments delays and obstructs the operation, and in view of the cleansing of the peritoneum, which has finally to be done at any rate, the addition of some blood from this source seems of very little, if of any importance.

(*b*) The hand introduced through the abdominal wound turns out the tumour, if of moderate size. If of too large size to be raised through the wound, Martin opens it with his knife, if it does not rupture from the pressure of his fingers. The escape of some of the contents of the tumour into the abdomen he considers unimportant, and he does not lay much stress even on the escape of pus from a pyosalpinx during an operation for its removal. The use of a trochar and canula is therefore dispensed with.

(*c*) The management of the pedicle is conducted on the same common sense principle. Cautery or clamp is never used. The pedicle is tied in separate parts—two or more according to its size, the threads being introduced by the ordinary

needle and needleholder. The tumour is cut away at a suffi-
cient distance beyond the ligatures, and the raw surface is
covered over with peritoneum, united by a continuous catgut
suture.   The Fallopian tube is specially closed to prevent
escape of possibly purulent fluid into the abdomen afterwards.

(*d*) Before returning the stump of the pedicle into the
pelvis, the hand is introduced to examine the other pelvic
contents.   A sponge is introduced to cleanse the cavity as
well as to detect possible bleeding.   When the sponge returns
clean—

(*e*) The abdominal wound is closed.   A flat sponge is laid
under it, and the sutures are introduced and tied at the upper
and lower ends.   The two or three threads in the middle are
introduced, but not tied till the flat sponge is removed, and a
sponge in the grasp of forceps introduced into the pelvis to
ascertain that the condition there is still satisfactory.   These
sutures are perhaps three-fourths of an inch from each other,
and include the peritoneum in their grasp.   After they are
tied, superficial sutures are introduced between them to unite
the skin neatly.

(*f*) The abdomen is again carefully washed ; a strip of
iodoform gauze is placed over the wound ; a thick layer of
salicylic wool is laid over the abdomen ; and a gauze roller
bandage, wrung out of a weak carbolic solution and used
moist, is applied round the body.

5. The patient is wrapped in a woollen covering and taken
to her bed, " which need not be isolated."   An ice bladder is
put over the abdomen, and warm jars at the patient's sides.
Morphia is given frequently.

An uncomplicated operation such as this, notwithstanding
the time it takes to describe, is performed by Martin in about
ten minutes.

His manner of treating complications is also interesting and
characteristic, and must be shortly considered in order to have
a complete view of the operation as he performs it.

In separating adhesions from the abdominal wall, if a single
vessel bleeds, he ties it.   This, however, is much rarer than
bleeding from a surface, and this he controls by sewing round
and across the surface a continuous catgut suture, which,
when drawn tight, draws all the sides of the surface together,
and so closes the bleeding vessels.

If there are adhesions to the bowel, they are separated at
the expense of the tumour, the parts of which left adherent
can be ligatured and removed at a later stage of the operation.
When a tear is made in the bowel wall, the edges of the serous

membrane are, if possible, united by a continuous suture, and when this is not possible liquor ferri or oil of turpentine is used to check the hæmorrhage. When the bowel wall is torn through, the laceration is at once sutured. When the processus vermiformis is firmly adherent, he ties and resects it.

Adhesions in the small pelvis are torn through with even considerable force, and the bleeding is sometimes free. The manner in which Martin sews together such bleeding surfaces in the small pelvis is only possible with his method of large abdominal wound. This is his procedure in all cases where the bleeding can be controlled by sutures, and these are the great majority. In the few cases where the bleeding surfaces are too large, he uses liquor ferri and drains into the vagina, closing, if possible, by continuous suture the peritoneal cavity over the cavity to be drained. This drainage into the vagina is adopted in cases where the tumour has developed beneath the peritoneum, and a great cavity with ragged walls is left after its removal, the peritoneum being in this case also closed above the cavity to be drained.

Protrusion of the intestines from the abdominal wound is not considered a serious complication by Martin. Indeed, whenever it is necessary, in order to obtain a good view of the pelvis or of the tumour for his operative purposes, he lays the intestines out of the cavity upon the upper wall of the abdomen, where they lie covered with a warm, moist towel. "The bowel in its whole extent" may be thus raised out of the cavity without danger.

When both ovaries are cystic Martin thinks they are best removed, but in many cases he has hesitated to make the woman sterile, and has punctured a dropsical follicle or resected a small cyst, leaving the rest of the ovary when it appeared healthy. Such a procedure as this illustrates the skill and patience with which he operates. In one case, at which I was present, after removing the left ovary, he resected a small cyst from the right, united the wound by continuous catgut suture, and as the Fallopian tube was closed by adhesions, he separated them also, covered the raw surfaces by peritoneum, and left the tube patent. Although, however, he has seen pregnancy follow in such cases, his opinion is strongly in favour of removing both ovaries where they are diseased, in order to save the risk of a second laparotomy, which he has had to perform in several instances.

With regard to cleansing the peritoneum at the end of the operation, he says :—" In my last 300 laparotomies I have not removed so carefully as before either blood or cyst contents,

or even pus. I remove only large clots and pools of fluid.
All the rest is absorbed. To end the operation quickly appears
to me much more important than to wash out every fold of
the peritoneum—that most important absorbent organ."

With reference to results, the patients are, as a rule, able to
sit up within a fortnight, and Martin dismisses them from
hospital about the 16th or 18th day after operation.

I cannot give his present percentage of mortality. It must
be much less than is given in his book of two years ago, in
which his figures were as follows :—133 cases of ovarian cyst;
25 oophoritis chronica; 9 dermoid tumours; 14 solid tumours;
12 castrations; 12 cyst of broad ligament; 3 vaginal ovari-
otomy—making a total of 208 cases, with 18 deaths = 8·67
per cent. Of these 10 died from septic causes, 6 of them
being among his first 28 operations. This leaves 180 cases
with 12 deaths, or 6·6 per cent. Of these, 5 were from sepsis,
2 from collapse, 2 from embolism, 2 in cases of solid tumours,
and 1 from cancer.

CURRENT   TOPICS.

STUDENT'S UNION BAZAAR AT THE UNIVERSITY.—The week
preceding Christmas witnessed a great transformation at
Gilmorehill. The place was first invaded by wrights and
upholsterers, who transformed its principal halls into most
ornate and unacademic shows. The decoration which was
designed by Mr. Campbell was brilliant and effective, and
highly suitable to the occasion. Then when the day of the
bazaar came, the transformation was still greater. The gaily
decorated stalls were manned by gaily dressed ladies (if we
may be allowed a solecism.) The familiar red gown had a
totally different effect, when enveloping a fair young girl,
from its usual one, and this with the other fancy dresses of
the fair stall-holders gave great variety and brilliancy to the
scene. When viewed from the gallery of the Bute Hall, the
bright crimson and gold of the fronts of the stalls, and the
variegated colours of the moving throng on the floor furnished
a scene long to be remembered. In the cloisters, which were
protected from the wind and illuminated by the electric light,
the chief feature was the fish-pond, where the angler on pay-
ment of a small sum (to bait the hook) was always sure of

securing an article, often of greater value than the amount of the bait.

Besides the stalls which occupied to the number of 12 the Bute and Randolph Halls, and the Game and Dairy-produce Stalls, which were outside, there were various entertainments in different parts. The Examination Hall—of unpleasant memory to many of our readers—was converted partly into a Theatre and partly into a Gipsy's tent. In the former there were at intervals a student's play, concerts, and another play. In the Gipsy's tent a Wizard and Gipsy Queen told fortunes by Palmistry. There was also the Café Chantant, where at intervals a cup of tea or coffee could be enjoyed to the accompaniment of vocal or instrumental music. Near at hand was the Refreshment Room, in which the waitresses, neatly dressed in grey and white (*à la* Miss Hardcastle), were young ladies from the city and neighbourhood. They looked quite superior waiting maids.

One of the most successful of the extra entertainments was Mrs. Jarley's wax-works, organised by Prof. M'Kendrick and Dr. Yule Mackay. Everything in this was well done, and the appreciation of the public was shown by the fact that, though the prices of admission were doubled after the first day, every representation obtained an overflowing audience, and it was necessary to go early to get a place.

The Bazaar was first for the finishing, furnishing, and endowment of the Building presented to the University by Dr. Macintyre of Odiham as a Students' Union. For this purpose a sum of £7,500 is required. In addition there are two other students' objects which require assistance—namely, the Gymnasium and the Athletic Club. It was hoped that for these an additional sum of £2,500 would be raised. The object of the Students' Union is to encourage the social and corporate life of the students, this being an aspect in which our Scottish Universities from their constitution fall behind their English sisters. The other associations to be aided also aim at furthering the interests of the students in directions which encourage good fellowship.

The Bazaar has been a complete success. Even when we consider that the expenses must be very heavy, still a sum of £13,716 will leave a handsome balance after providing the needed £10,000. We have been close observers of the whole proceedings from the first, and we have been greatly impressed with the business capacity shown by the half-dozen young men who have had chiefly to do with the arrangement of the Bazaar. Everything was done quietly, promptly and

thoroughly, and there seemed to have been no hitch in the
proceedings from beginning to end.

THE GLASGOW UNIVERSITY COUNCIL ASSESSORSHIP.—This
election, which has excited much interest, has now been decided
by the return of the three candidates who may be called the
Moderate Reformers. The figures are—Dr. H. C. Cameron,
1,654 ; Sir John Neilson Cuthbertson, 1,616 ; Mr. David
Hannay, 1,372 ; Mr. Vary Campbell, 1,038 ; Sheriff Guthrie,
1,036 ; Dr. D. C. M'Vail, 894. The unsuccessful candidates
represented themselves as the only true reformers, and the
others as simply nominees of the University authorities.
The truth seems to be that all parties recognise the need of
reforms. The constituency has decided that these shall be
effected in a moderate and friendly spirit. There is not
the least doubt that the methods adopted in filling up the
appointments in St. Mungo's College, on which we com-
mented in our October issue, had an important influence on
the election.

WESTERN INFIRMARY OF GLASGOW.—The fourteenth annual
meeting of qualified contributors to the Western Infirmary of
of Glasgow was held on the afternoon of Thursday, 28th
November, 1889, in the Merchants' House—Mr. John Wilson,
M.P., chairman of managers, presiding.

Mr. Henry Johnston, the secretary, submitted the annual
report, which showed that the number of outdoor patients
treated during the past twelve months was 12,266, who paid
32,743 visits, as compared with 13,206 patients and 35,062
visits for the previous year. The indoor patients treated
numbered 4,073, as compared with 3,961 for the previous
year. The number of patients treated at the dispensary is
less than that of the preceding year by 940, while the indoor
cases treated to a termination show an increase of 96 for the
same period. The average daily number of indoor patients
was 371·17, as compared with 374 in the year ending 31st
October, 1888. The greatest number of patients in the
hospital at one time was 404, and the smallest 314. The
average period of residence of each patient was 36·61 days,
against 37·92 last year. The number of deaths was 316, or
8·54 per cent of all the cases treated to a termination. Of
the fatal cases, however, 76 were of such a hopeless character
when brought to the hospital that the patients died within 48
hours after admission, Deducting this number, as usual, the
death-rate is reduced to 6·48 per cent. Amongst the indoor

patients treated there were 429 of twelve years and under, of whom 340 were surgical and 89 medical cases. There were also 656 children vaccinated. The ordinary income for the year was £15,874, 10s. 2d., as compared with £14,378, 5s. 6d. for the previous year, and the expenditure £18,951, 3s. 10d., against £17,893, 15s. 3d. It is gratifying to the managers to observe that there is an increase in almost every branch of the ordinary income. The cost of each bed fully occupied was £51, 1s. 2d., the average cost per patient £5, 2s. 5¼d., and the average residence in the hospital of each patient 36·61 days. A reference is also made to the treatment and care of convalescent patients, and the managers suggest that a suitable convalescent home, properly equipped and placed at the service of the Infirmary, would not only be true economy in the end from a financial point of view, but it would enable the present medical and surgical staff, with the accommodation now at their disposal, to overtake a very much larger amount of curative work. The thanks of the managers are given to subscribers and others who have assisted the Institution.

The chairman, in moving the adoption of the report, referred to the large number of patients treated during the year. Figures could not give them an adequate idea, but when they considered that the number of indoor patients dealt with would fill St. Andrew's Hall, they would then see the benefits of this institution. He spoke with satisfaction of the increase of income, the only exception being a small difference on the church collections, which might be perfectly explainable. While the cost per bed during the past year had been higher than usual, this was to be accounted for by an extra expenditure which had been carried against revenue. He was glad to see an increase of £300 in employees' subscriptions, and the increased prosperity in trade all over the country, and especially in the immediate vicinity of their infirmary, lead them to believe that the subscriptions during the current year would be increased. He commended systematic giving on the part of working men, and as to the proposed convalescent home, when he mentioned that there were during the course of the year from 19 to 50 waiting for admission in one week, they would see that they were keeping out patients from the curative power at the disposal of the Infirmary, and thus perhaps sacrificing life, which they would all deplore. If the managers found a response to encourage them to go on with such a home, he was sure they would not be slow to take advantage of it.

ROYAL HOSPITAL FOR SICK CHILDREN, DISPENSARY.—On the afternoon of Thursday, 26th December last, the patients of the Dispensary, to the number of about 100, were entertained to tea by the ladies' auxiliary. The Dispensary Hall was tastefully decorated, and the children were accommodated at three long tables. There was a large attendance of ladies interested in the welfare of the hospital, and among the gentlemen we observed Mr. Thomas Carlile, the indefatigable chairman of the hospital, Colonel Clark, Rev. Mr. Macnaughton, Dr. Lindsay Steven, Dr. Parry, Dr. Bryce, and others. The proceedings were opened by the children chanting the blessing which they use before meals in the hospital, immediately after which they were supplied with tea, and the business proper of the meeting began. The ladies seemed to enjoy immensely the work of pouring out tea and handing round cake, and many of them showed great tact in dealing with their little guests, saying the right word in the right place, and comforting those who were afraid of their unusual environment. We observed again what we noticed at the same gathering last year, that there was an absence of the boisterous hilarity which characterises a meeting, say, of healthy Sunday school children, and the appetite of the assemblage was distinctly below par. After tea, various games were engaged in, and a magic lantern entertainment gave great satisfaction to the children, most of whom were, as was to be expected, of a contemplative rather than of a romping disposition. At the close of the magic lantern exhibition the children were sent home—happy in the possession of an orange and some toys. We have no doubt that the ladies felt well repaid for all their labour by the placid happiness which they saw in the children's faces at their Christmas gathering.

THE TEACHING OF FEVERS IN GLASGOW.—We regret to observe that Dr. J. W. Allan of Belvidere Fever Hospital has intimated that he does not intend to give instruction in fevers to medical students for the future. We do not presume to know what has induced him to come to this regrettable conclusion, and we have no desire to enter into the controversy which has arisen regarding it. We have only to express the hope that Dr. Allan will rise above the local jealousies of individual schools, if these exist, and assert his position as an Independent Lecturer on an important subject. We may venture to hint that with the important field of clinical observation at his disposal, Dr. Allan owes a public duty to the medical profession and to the rising generation of it. No

one doubts his admirable qualifications for fulfilling this duty, and we trust that no personal feeling will prevent him placing his experience and abilities at the disposal of the profession. There is still another point of view in which the present position is unfortunate. The compulsory Notification of Infectious Diseases has been adopted by many communities — we are glad to notice Hillhead amongst the number and give credit to its judicious medical officer—and it seems absurd in the face of this fact to shut up virtually the only place where Glasgow students can become practically acquainted with the diseases in question. Altogether we believe that Dr. Allan must soon see his way to resuming the position which he has held with undoubted profit to the students and honour to himself.

Mrs. James. S. Higginbotham.—In the death of this charitable lady the sick poor of Glasgow have lost a faithful and devoted friend. The end occurred somewhat suddenly at the last, but could not have been surprising to those who knew her well. The best memorial of her life is the Institution which she was the means of raising up in our midst for the benefit of the sick poor. For years we have watched with great interest the operations of this association, and, while admitting that administrative errors may occasionally have occurred, we must bear hearty testimony to the valuable work it effected in the slums of the city. Often, while assisting the nurses in their district work we have seen the lady who founded the Charity come into the poverty-stricken home, and render valuable aid and encouragement. It will be long ere the sick poor of Glasgow forget "Lady Higginbotham," and we hope that, for the honour of the city, our citizens will see that the usefulness of the Glasgow Sick Poor and Private Nursing Association is not diminished now that the founder has been taken away.

The Housing of the Poor.—The interest which was aroused some time ago in the Town Council and various public and private bodies in this most important matter, and which we commented upon in previous issues, has taken practical shape during the present winter, and, in addition to important addresses and papers by Mr. Smart, one of the Commissioners, we have now a Commission of the Glasgow Presbytery actively engaged in taking evidence with the object of thoroughly investigating the whole matter. The meetings are held in the Hall of Hutchesons' Hospital, and Dr. F. L. Robertson, as chairman, directs the labours of the Commission. Some very

valuable and convincing evidence has already been led, and we have been particularly struck with the testimony of Mr. Hugh Wood, assistant sanitary inspector. As the tale he tells is of exceeding interest, and calculated to arouse feelings of sympathy and a desire for reform, we venture to reprint the bulk of his evidence as it appeared in the columns of the *Glasgow Herald* of Tuesday, 24th December, 1889 :—

Mr. Wood, who has been eighteen years connected with the sanitary department, during nine of which he has been night inspector of ticketed and lodging-houses, in reply to the chairman, said that, over and above the occasional inspection of ticketed houses, they were all regularly inspected once a year. He had prepared a table showing the results of last year's inspection of that kind. Proceeding to give extracts from that table, Mr. Wood said the number of ticketed houses in the central district was 3,107 single apartments and 1,418 two apartments. At the inspection he found 105 single apartments overcrowded, 42 of which contained under 900 cubic feet and 63 over 900 feet. Of these houses 55 were occupied by one family and 50 by two families ; and in 43 there was mixing of the sexes. He meant by that that they found two women and one man, or two men and one woman, other than man and wife and other than members of one family, in the same house. In the two apartment houses 22 were overcrowded, 5 with one family and 17 with lodgers. In the southern district there were 3,335 ticketed houses. The total number visited, exclusive of empty houses, was 2,620, and of these 215 were overcrowded, 99 were under 900 cubic feet, and 116 over that amount. Of the overcrowded houses, 150 were overcrowded with one family and 65 with two families, and in 61 there was mixing of the sexes. The two apartment houses had 32 overcrowded, 14 with one family and 18 with lodgers.

The Chairman—I want you to give the Commission an account of your experience in the course of a night's work.

Mr. Wood, in compliance, gave some particulars of a tenement at 2 South Stirling Street, in which there were 20 dwellings, 8 being single apartments and 12 two apartments. All the single apartments were what were called made-down houses. There were no sanitary conveniences provided in these houses. The first house visited was that of a labourer, in which there were the tenant and his wife and two children, and the wife's brother. The man and wife and the two children lay on the floor in a recess bed in the wall, and the wife's brother lay in a corner with a sack to cover him. There was very little furniture in the house. The house only

contained cubic space for $2\frac{1}{2}$ adults, and the inmates were equal to 4 adults. Another house contained a labourer and his wife and two children, who all lay in a raised bed with only a shawl to cover them. Another house was occupied by a carter and his wife, who lay in the bed recess covered with an old mat, and the only articles in the house were a few old boxes and a few dishes. A two-apartment house was occupied by a woman and five children aged from 1 to 10 years, and all were lying in the kitchen bed. The woman's husband was a seaman, who was absent on a voyage. In the room, a man and wife and two children, who had been put out of the house opposite, were all lying on the floor. The cubic capacity of that house allowed for 6 adults, and the inmates equalled $7\frac{1}{2}$. He afterwards went to South Coburg Street, to a tenement containing 12 one-room houses and 3 two-room houses. In one of these he found a carter and his wife lying in bed, and the wife's sister and two children lying on the floor in front of the bed. The rent of that house was 9s. 6d. a month, it was measured for two adults, and the inmates were equal to four. In a two-room house he found a tailor and his wife, son, and daughter, all lying on separate " shake-downs " in the kitchen, the room being empty. He then went to a tenement in Stockwell Street, where the people were in the habit of taking houses from a middle-man who farmed them out at 6d. and 7d. per night. In the first he entered he found a man with his wife and two sons all lying on one "shake-down." The husband came to the door naked. They paid 7d. per night for the house, which contained no furniture. In another house, let at the same rate, two women and three children were all in one bed, and one of the women was very much the worse of liquor. He found a coal porter in bed in another apartment, while his wife and her brother lay on forms by the fireside ; and in another room, rented at 6d. per night, he found a light porter with his wife and sister all in one bed. In another single apartment a quay labourer, his wife and three children, and the wife's mother all lay on the floor ; and the next house was occupied by two girls, who had not yet gone to bed although it was three o'clock in the morning.

May we take it that this account of one night's visitation gives a fairly accurate picture of the conditions in respect to overcrowding, and rent, and houses, under which the poor live in these two districts ? I would not say so, because I took these two blocks as being bad. The other ticketed houses I visit are as a rule better than these two blocks.

What proportion of the persons who inhabit these ticketed

houses belong to the industrious poor—persons who are poor
either from receiving very low wages, or from turning their
wages to bad account ? In the southern district I would say
three-fourths, and in the central district one-fourth.

Proceeding, Mr. Wood said these people had no facilities at
all for washing their clothes, or even themselves, beyond the
sink on the stairhead. They would be, perhaps, quarter of a
mile distant from the public wash-houses, and they did not
use them.

In visiting from time to time in these districts, do you ever
come upon dead bodies coffined or lying in a single room
house with the whole family going about their ordinary
duties ? I came upon one a week ago. On going into the
house, which was dark, I ran against the end of the coffin.
It is a thing of weekly occurrence to come upon houses where
a corpse is lying.

Then, do you think if mortuaries were provided these people
would take advantage of them, and remove the corpses to them
until the day of burial ? Well, if they got liberty to " wake "
them—that is, so far as the Roman Catholics are concerned.

Then, is it the case that the small pawnshops in these
localities do not hesitate to take an article of clothing from a
woman when under the influence of drink ? I have seen that
repeatedly.

If these houses you visit were put into fair condition and
sanitary conveniences provided, would they be suitable houses
for persons who cannot afford to pay a higher rent ? There
is no doubt they would. Some of them are substantially
built; and I know of one tenement which has been made down
where some of the single apartments have beautiful white
marble mantelpieces.

Are you of opinion that the appointment of caretakers
would result in good to the tenants as well as to the landlords?
I have had experience of properties where caretakers have
not been successful. If a good man were appointed I think
it would be beneficial to both tenants and landlords.

Supposing any attempt were made to improve the condition
of the houses inhabited by the industrious poor, would it be
better to improve the present houses or to build new ones ?
It would be better to put the present properties into thorough
good repair than to build new houses.

TUBERCULOUS MEAT.—The North of Ireland branch of the
British Medical Association recently appointed a committee to
inquire into the question of bovine tuberculosis and its trans-

missibility to man. Their report was submitted at a meeting of the branch held last month at the Royal Hospital, Belfast. It is a very elaborate and thorough document, in which copious reference is made to the report of the proceedings at the trial of the test case in Glasgow. As a result of the report, the meeting passed the following resolution:—"That, in view of the recent discoveries with regard to human and bovine tuberculosis, and of the opinions held by many eminent scientific authorities concerning the communicability of tuberculosis from man to animal and from animal to man, and in view of the enormous prevalence of the disease in one form or another among mankind, this meeting of the North of Ireland branch of the British Medical Association disapproves of the practice of allowing any part of the carcass of an animal which has been shown to have been affected with tuberculosis to be sold as sound and wholesome meat."

The Cholera Bacillus.—Professor Dr. Mussbaum, the celebrated authority upon hygienic matters, has expressed himself as to the inocuousness of the cholera bacillus as follows:—"Since Koch discovered the cholera bacillus it has come to be known that no human being living at the place where the epidemic rages escapes this poisonous fungus, for it is in the air we inhale, in the water we drink, upon the food which we eat; it is in the soil, and when this is moist and unclean, multiplies with extraordinary rapidity. In spite of this fact, in a city of, say, 200,000 persons visited by cholera, perhaps but 1 per cent—that is, 2,000—will be attacked. The other 180,000 persons remain unimpaired in health, although they have all inhaled, swallowed, and drunk the cholera bacillus. It is now known with certainty that the cholera bacillus is dangerous only to those persons whose stomach is not in a healthy state, and jeopardises life only when it passes into the intestines. A healthy stomach will digest the bacillus, and therefore it does not reach the intestines in a living state."

Messrs. Burroughs Welcome & Co., have asked us to intimate to our readers that they will be happy to supply, post free, a copy of their "Vest Pocket A, B, C, Pocket Diary and Memorandum Book," containing 106 pages, apportioned for each day in the year, to any medical man who may desire it, upon his sending to them his name and address. They will also, upon request, send to any medical man a copy of their Calendar for 1890, which has on the back a complete list of all their preparations.

DEATH OF MR. WILLIAM MACDOUGALL, PRINTER.—Readers of and contributors to the *Glasgow Medical Journal* will have learned with regret of the untimely death of Mr. William Macdougall. Mr. Macdougall for the last three years had undertaken almost the entire management of his father's printing establishment, and during many years we have constantly been in communication with him concerning the publishing of the *Journal*, and other matters pertaining to its success. He took a very warm interest in everything connected with the welfare of our Glasgow Medical Monthly ; and our contributors, who have had occasion to call at the office, will join us in bearing testimony to his constant courtesy of demeanour, and his willing helpfulness. Some years ago Mr. Macdougall spent fully twelve months in America and Canada with the object of perfecting himself in his trade, and those who know Gairdner and Coats' and Newman's *Lectures to Practitioners*, of the printing of which he took the management, will be ready to admit that in the practical art of printing he had little to learn. We have not unfrequently heard authors remark upon the cleanness of our proofs, and this was not a little due to his constant watchfulness and skill.

Mr. Macdougall was in harness till a few weeks before his death at the age of 31, although we had observed that he had not been looking at all well for a number of months. We understand that malignant disease of the stomach was the cause of his death, and that from the nature of the case very great suffering must have been endured with great fortitude. He leaves a widow and one child.

REVIEWS.

The Various Manifestations of the Rheumatic State as Exem-
    plified in Childhood and Early Life: Lectures Delivered
    before the Harveian Society of London. By W. B. CHEADLE,
    M.D. London : Smith, Elder & Co. 1889.

THIS is one of the best pieces of clinical writing that it has been our pleasure to peruse for a long time, and it is one which we can therefore most cordially recommend to the favourable consideration of our readers. Every page of the book bears the hall-mark of carefully trained and accurate

powers of clinical observation and reasoning, and on finishing its perusal the reader experiences a satisfactory sense of not having spent his time in vain. The book is not a large one, and consists of three lectures delivered before the Harveian Society of London. At the beginning of the first lecture we have the keynote of the lectures expressed in language remarkable for its conciseness and perspicuity; and our readers will obtain some idea of the author's aim from the following extracts:—

"I must premise, at the outset, that in these lectures I shall use the terms 'rheumatism' and 'rheumatic' in the strictest sense, as applying only to that form which is distinguished as acute or genuine rheumatism, of which what is known as rheumatic fever is the most extreme expression in adults, but which appears with every degree of acuteness and severity, and also, as I hope to show, in many different phases.

"Acute articular rheumatism is not only an extremely common disease, but it has very striking and obvious symptoms by which it is readily recognised; the swollen, tender, painful joints, the fever, the profuse sour-smelling perspirations, render a typical case unmistakable and distinct; yet this is a picture of the disease very rarely seen in childhood. Even in its milder forms, genuine articular rheumatism preserves its special features; some may be absent, others modified; yet the stiffness, tenderness, and swelling of joints usually indicate the nature of the affection. But this, again, does not represent rheumatism completely as seen in childhood. We are so accustomed to associate the term 'rheumatism' with this condition of the joints, to regard arthritis as the chief and essential feature, and any associated affections of other parts as mere complications, that it is difficult at first to realise that articular inflammation is only one of many direct and sometimes independent manifestations of the rheumatic state. This is, however, the one central idea which I wish to enforce."

. . . .

"The conception of rheumatism, then, which I shall endeavour to put forward and establish is this broad one; that the terms 'rheumatism' and 'rheumatic' must be held to include many various morbid expressions — the series of phenomena I have laid down—and must not be regarded as a special inflammation of tendons and ligaments or synovial membranes, or as a condition of which this is always the chief feature, accompanied by complications and sequelæ."

. . . .

"The rheumatism of childhood exhibits a marked contrast

to the disease as it is seen in mature life. The articular affection, which is regarded as the very type and essence of the latter, has not yet become the chief feature, but is usually slight and subordinate, and, indeed, may be absent altogether from a seizure undoubtedly rheumatic in its nature; while other phases, again, less marked in the disease of adult life, or even absent from it altogether, rule as prominent and characteristic features. The joint tissues are less susceptible; the other fibrous tissues more so. Subcutaneous nodules, which are so frequent and significant in early life, practically disappear with the advent of puberty; and chorea, so common in connection with the rheumatism of childhood, disappears as full maturity is reached. Endocarditis and pericarditis, again, frequent as they are in adult life, are more frequent still in children—*i.e.*, they tend to decline as age advances.* In the rheumatism of early life arthritis is at its minimum; endocarditis, pericarditis, chorea, and subcutaneous nodules at their maximum. As life advances this is gradually reversed; the joint affection becomes more prominent, constant, and typical of the disease, and reaches its maximum; while the other phenomena decline and tend to die out. So that, if the picture of the disease had been drawn originally (as it should be) from the rheumatism of childhood, the articular affection would not have been taken as representative, or endocarditis and pericarditis spoken of as complications."

These extracts give a good idea of the thesis our author sets himself to establish, and the arguments, by which in succeeding pages he endeavours to establish it, are most convincing. The first lecture also includes a series of very interesting and conclusive cases in support of the position taken up. The second and third lectures discuss in detail the different manifestations of the rheumatic state—viz., the anæmia of rheumatism, tonsillitis in its relation to rheumatism, erythema nodosum, chorea, subcutaneous nodules, pleurisy, pericarditis, and endocarditis. At the close of the third lecture we have a most interesting discussion of the different forms of valvular cardiac disease, and the importance of the following remarks upon mitral stenosis justifies our quoting it in full :—

" The earliest sign of mitral stenosis is reduplication of the

* The statistics of the Collective Investigation Committee of the British Medical Association (*British Medical Journal*, February, 1888) give 72 per cent of heart disease in rheumatism in the case of children, as compared with 46 per cent in male adults. In the case of female adults the difference is not so marked—*i.e.*, they retain in some degree the special proclivity of childhood.

second sound *at the apex.* Dr. Sansom has observed generally,* that 'reduplication of the first or of the second sound is an early sign of stenosis.' But I would limit the statement of reduplication at the apex, audible over the mitral area only, or at least having its maximum intensity there. Dr. Sansom gives two cases† in which this local limitation was observed, but he does not differentiate them from the rest. Now, although reduplication of both first and second sounds, audible over the aortic and pulmonary valves at the base of the heart, occurs in certain cases of mitral stenosis, it is not this with which I am concerned; that is not an early sign according to my experience. It is reduplication *at the apex* which is the significant early sign; basic reduplication usually comes later, with a pronounced presystolic murmur or with mitral regurgitation, and it is explained readily enough by the difference in tension in the pulmonary artery and aorta, causing asynchronous closure of their respective valves. It appears, however, to be generally assumed that this asynchronism of the pulmonary and aortic valves will account for *all* reduplication. But it certainly entirely fails to explain reduplications audible only at the apex. If the doubling of the sound were caused by the asynchronous closure of the aortic and pulmonary valves, it would be audible over their position—*i. e.*, at the base of the heart,—but it is not. Dr. Sansom saw this difficulty, and to him the credit of a more correct explanation is due. He suggests that the *first* of the two second sounds is the normal one caused by the simultaneous closure of the pulmonary and aortic valves, and the *second* by the sudden tension of the mitral flaps as the ventricle relaxes. The blood in the auricle, in a state of increased tension, drives open the mitral door, and, rushing round the sides of the ventricle, gets underneath the curtains—the anterior one which, as Dr. Macalister has shown, is stretched tight from the basal ring to the top of the papillary muscle—and thus gives rise to a sound of tension.‡ This explanation is, I think, correct in the main—so far as this, at least: that one of the two second sounds—viz., the second—is mitral in origin. It is not audible at the base; only one sound is audible over the aortic and pulmonary area, while two are audible over the mitral area. The one which is heard over the mitral only must be produced there. It seems to me that the most probable explanation is that the *first* of the two second sounds is the normal one caused

* *Lettsomian Lectures*, p. 22.
† *Trans. Med. Soc.*, vol. v, p. 204.
‡ *Lettsomian Lectures*, 2nd ed., p. 123.

by the click of the basic valves, as Dr. Sansom suggests, the pulmonary element being accentuated and rendered louder by increased resistance in front. The *second* of the two second sounds is due to the smack or click of the forcible opening of the swollen, rigid mitral with shortened chords, kept closed with difficulty by the contracting ventricle, and springing back suddenly as the ventricle relaxes and exerts its suction power, aided by the increased tension in the left auricle, rather than by the auricular contraction, which occurs later. The suction power of the relaxing ventricle has been shown by Marcy and Fick, and Goltz and Gubler, to be considerable at the beginning of diastole, possibly as much as 23 millimetres of mercury, independent of respiration.* This view is supported by the fact that, after the *second* of the two second sounds—*i.e.* the one which Dr. Sansom and myself take to be the *mitral* sound—there is in some instances a soft bruit, a distinct diastolic murmur, probably due to the rush of blood through the narrowed aperture caused by the auricular contraction which comes, not at the very beginning of diastole, but a moment after its commencement. Reduplication of the second sound at the apex, then, is, I think, the earliest sign of swelling and rigidity of the mitral flaps, and consequent imperfect opening of the valve. Whether the explanation I have given be accepted or not, there can be no question as to the connection of this morbid sound with early mitral stenosis, and of its clinical significance."

With this notice of what we consider to be a most valuable communication to medical literature, we leave the book to our readers.

Outlines of the Clinical Chemistry of Urine. By C. A. Mac Munn, M.A., M.D. (Dub.) London : J. & A. Churchill. 1889.

" This book," says the author in the preface, " contains a brief, but I hope, accurate account of the chemistry of urine in health and disease." And he further adds :—" The busy practitioner has not time to read up large text-books, and requires, in small compass, such information as will enable him to perform an analysis of urine, or to judge intelligently of the results of one made by another."

The book, therefore, must be judged on the merits of this explicit statement as to its aims. The first chapter contains a brief account of the structure and functions of the kidneys, together with the mechanism of secretion, and the various

* Macalister : *Brit. Med. Jour.*, 28th October, 1882, p. 123.

causes modifying or influencing the secretion, while a table of the various actions of diuretics concludes the chapter. We think it might have been well had this chapter been omitted, as it is in the main a resume of what is so admirably stated by Lauder Brunton in his *Text-Book of Pharmacology and Therapeutics*, where the theories of secretion, as expounded by Ludwig and Bowman, are stated at greater length and with greater clearness than in the book under review, and indeed the standard of anatomy and physiology attained to by students and practitioners of the present day might have been a sufficient excuse for omitting this chapter *in toto*.

The chemistry of the normal urine is then considered—first, as regards colour, reaction, quantity, specific gravity, estimation of solids, &c., and also the reactions of the normal urine towards reagents. The constituents of the normal urine, with their chemical analysis and qualitative and quantitative tests, are then discussed in considerable detail; this portion of the work extending over several chapters, and embracing the consideration of urea, uric acid, xanthin, hypoxanthin, pigments and aromatic substances, the inorganic constituents of urine (phosphates, chlorides, sulphates), &c., seems to comprise, within moderate compass, an accurate account of the chemistry of the urine according to the most recent researches, being extremely well supplied with references to an extensive bibliography principally, it may be noted, of the works of German authors. Urea and uric acid are gone into pretty minutely, and a good table of the chemical relationships of urea to uric acid, and of uric acid to the xanthin bodies is given, while a number of diagrams of apparatus and crystalline and other bodies adds to the elucidation of the subject. In the quantitative analysis of urea by the hypobromite method, Gerrard's apparatus is strongly recommended, while Russell and West's "cannot be recommended," and Apjohn's is merely mentioned. We do not know how far this is in accord with the experience of most practitioners. As to the theory of urea formation, the author leaves us somewhat in doubt, as beyond the fact that it is formed from proteids, and is not formed by the kidneys, but merely got rid of by them, not much information is given, and the reader is referred to Foster's *Physiology* for further details. The theories of Frerichs, Traube, and others as to uræmia are discarded, the author stating that there can be little doubt that "the animal alkaloids known as ptomaines and leucomaines play a most important part in both uræmia and probably in Küssmaul's coma."

The second part of the book treats of the abnormal con-

stituents of the urine, both qualitatively and quantitatively. Albumen, sugar, peptones, blood, fatty bodies, &c., being considered, for the detection of which most of the ordinary tests are mentioned in pretty full detail. Some of the tests devised by Drs. Johnston and Oliver are hardly so fully described as we should have liked, references to these author's books being made where in our opinion the details of the test might have been given. We do not know if the majority of practitioners will agree with the author that when albumen is in small quantity the nitric acid test "is liable to several fallacies, so much so that it is now but little used." A good account of acetone and diacetic acid in urine is given, with full reference to their clinical significance.

The third part of the book deals with urinary deposits and calculi, and drugs and poisons in urine, a system of analysis of calculi and the reaction with reagents of the sediments being given, while two appendices, one containing a list of apparatus and reagents required for full chemical analysis of urine, and the other an explanation of terms used in analysis, and tables for converting the metric system (used throughout the book) into the English system bring the book to a close.

The author assumes perhaps a more intimate knowledge of chemistry than is possessed by most practitioners, and on this theory perhaps some of the descriptions of experiments are so concise as to be a little difficult of ready appreciation by the unpractised chemist, but this is more the fault perhaps of the practitioner than the author, and descriptions of experiments are always apt to be involved when the actual experiment is not performed.

The adoption of the metric system throughout must be a boon to scientific men.

One point that strikes us as being defective is the small attention paid to the *clinical* aspect of the conditions and constituents described, which, in a book for practitioners is of paramount importance.

One very excellent feature, however, is a diagram of spectra at the beginning of the book. In this department the author seems to have done good original work, and no praise can be too high for the extensive references throughout the work.

All round, the author may be congratulated on producing a book which, if a little beyond the chemical knowledge of the average medical man, will however enable him to appreciate more intelligently the work done by experts; while its every page bears the impress of extensive reading, well applied to the subject under discussion, and the modesty of the preface goes far to disarm adverse criticism.

Manuel d'Ophthalmologie. By L. DE WECKRER et J. MAS-
 SELON. Paris: Lecrossnier et Bubé. 1889.

PROBABLY the work now under consideration is best described
as a very good boil down of Weckrer and Landolt's *Traite
complet.* That work is more a book of reference, whilst this
is supposed to be more suited to that large class of readers on
whose account so much is published—viz., "students and
general practitioners." We remember reading of a Londoner
who thought life too short to remember Scottish names, and
we are certainly of opinion that an average student's study
life is much too short to peruse the *Traité complet.* We are
not sure, however, that it is long enough to allow of his reading
the 968 large sized, small printed pages of which this manual
consists.

The volume which we are now considering is especially
strong in histology, and bears evident traces of the work of
such undoubted authorities as Waldeyer, Merkel, Schwalhe,
&c. The illustrations of the minute anatomy are not surpassed
by those of any other text-book of the same size. We think
that it would have been a great improvement had there been
a few more illustrations of the external diseases of the eye.
Pages of description, no matter how well written, will never
convey to a student's mind such an idea of conditions like
blepharitis or acute catarrh as will well executed coloured
drawings, such as those to be found in Mr. Berry's admirable
text-book. After all, what a student or practitioner wants is
to be able to recognise a disease when he sees it, and to be put
on the right lines of treatment.

The part which will possibly be of the greatest interest to
ophthalmologists is that which deals with the very difficult
subject of the treatment of glaucoma. The balance of opinion
in recent discussions has been that the safest and best treat-
ment, except in cases of hæmorrhagic glaucoma, is a large
iridectomy. It is, therefore, interesting to see what De
Weckrer, the chief upholder of the rival operation—scler-
otomy—has to say in his latest publication. After a brief
reference to the use of eserine, the operation of iridectomy is
fully discussed.

This operation was introduced for the relief of glaucoma by
the immortal Von Graefe, who advocated a large and peripheral
iridectomy.

There are evidently two factors in this operation, on either
of which the benefit may depend—viz. (1), the scleral incision;
(2), the excision of a portion of the iris. De Weckrer tries

to eliminate the effect of iris excision on the following grounds :—

The effect cannot be due to a decrease in the secretion area, for in many of the cases of successful iridectomy the iris is little more than an atrophied remnant of the original membrane. Moreover, as Deutschmann's experiments have proved, the iris has, even in health, little influence on the intraocular secretion. Nor can it be due, as Exner supposed, to the division of the vessels of the iris causing by anastomosis a direct passage from the circle of the iris into the veins. For many cases succeed in which the vessels of the iris are much atrophied. From such considerations De Weckrer became convinced that improvement was really derived from the sclerotic incision. The efficacy of any operation depends on the formation of a filtration cicatrix. This is best obtained where the tension is high. Hence the cases which are the best for operation are the acute or subacute. Simple glaucoma is not often relieved by operation. The description of sclerotomy, as performed by De Weckrer, is admirable, and ought to be read by all who perform this operation. We are aware that in many cases we have failed to relieve glaucoma by sclerotomy, and on looking back on the cases we cannot say that we have performed the operation after De Weckrer's plan.

The conclusion to which the author comes is as follows :— Iridectomy can only surpass sclerotomy in filtration power when we succeed in tearing the iris from its ciliary insertion, and when the wound heals without any inclusion of the iris— two conditions very difficult to obtain. After a sclerotomy the fluid must first pass through the iris, and then through the cicatrix, and thus its course is more impeded than when it has only to pass through the cicatrix. With equal success in the performance of both operations, iridectomy is more efficacious than sclerotomy. But a good sclerotomy is better than a bad iridectomy.

The rest of the book seems to us of a high order of merit. The chapters on cataract and diseases of the optic nerve and retina are particularly good.

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Through the Ivory Gate. By WILLIAM W. IRELAND, M.D. Edinburgh : Bell & Bradfute. 1889.

DR. IRELAND has given us a second volume of his interesting studies in psychology and history. In this he deals with individuals considerably removed from each other as to time

and place, degree of civilisation, intellectual ability, and social position, laying under survey in succession Swedenborg, the Swedish *savant ;* Blake, the English engraver ; King Louis II, of Bavaria ; Guiteau, the assassin ; Riel, the French-Canadian revolutionary ; Gabriel Malagrida, the Italian Jesuit, contemporary of Swedenborg ; Theodore, of Abyssinia ; and Thebaw, of Burmah.

More than one-third of the volume is devoted to the consideration of Swedenborg ; and though it is certain that there are not a few who believe that his claims to divine inspiration are founded on truth, an unbiassed reader of Dr. Ireland's lucidly written chapters can hardly fail to come to any other conclusion than that his views and conduct of life overstepped the bounds of mere eccentricity, and that he was the subject of a variety of mental unsoundness. The existence of insanity may be determined either by making the mind of the individual himself or that of the physician the standard of comparison ; and considering that a century has elapsed since the death of Swedenborg, and that the standard of sanity, and therefore of insanity, may have undergone a change during the interval, the former method appears to be the one most free from sources of error in judging as to his mental condition. In every sense a highly gifted man; possessing an intimate knowledge of chemistry, anatomy, and other sciences as known in his day ; and unequalled by few of his contemporaries in breadth of knowledge, but inheriting from his father a neurotic tendency, a change in his modes of thinking is observable as occurring perhaps as early as his forty-eighth year, and probably induced, Dr. Ireland thinks, as the result of his intense devotion to the preparation of his anatomical treatises. "His brain and whole nervous system got into the excited state shown by his dreams and other nervous disturbances recorded in his diary. There were hyperæsthesia of the senses, flashes of light in his eyes, sounds in his ears, and strange feelings throughout his frame. These impressions were gradually elaborated, under the powerful predisposition of his mind, into divine visions, heavenly voices, and the contact of spirits." From contemporary evidence it appears that while he was in London he passed through an attack of acute insanity. At that time he declared himself to be the Messiah. On one occasion he stripped himself naked and rolled himself in the mud, after which he was placed under the care of a physician, and had six men in charge of him. His fate was very different from that of his contemporary, Malagrida, who also laid claim to divine inspiration. He fell

a victim to the religious intolerance of the Dominican Inquisi-
tors of Lisbon, and was strangled and burned at the age of 72,
and Swedenborg died quietly in London. "Had the latter,"
says Dr. Ireland, "lived in the Spanish instead of the Scan-
dinavian Peninsula, he might have had a similar fate."

There will be found much that is of the deepest interest in
the chapters devoted to King Louis, Guiteau, Riel, Thebaw,
and Theodore; and although it is somewhat doubtful that one
and the same standard is applicable in determining the mental
condition of each of these, Dr. Ireland's researches serve to
throw a flood of light on many events of comparatively recent
occurrence.   An investigation and exposition, by a psychologist
of recognised ability, of the mental characteristics of indi-
viduals who occupy a prominent place in the world's history,
cannot fail to prove interesting to the reading public generally,
and *Through the Ivory Gate* will, we are sure, have accorded
to it a reception as cordial as that which was given, both at
home and abroad, to its predecessor, *The Blot upon the Brain.*

*Account of the Life and Works of Maister Peter Lowe, the
    Founder of the Faculty of Physicians and Surgeons of
    Glasgow.* By JAMES FINLAYSON, M.D. Glasgow: James
    Maclehose & Sons, Publishers to the University. 1889.

THIS is a work not only of medical but of great general
interest and importance, and in writing it, Dr. Finlayson has
made a most valuable contribution to our knowledge of the
history not only of the Faculty of Physicians and Surgeons
but also of the ancient city of Glasgow itself. Many are
accustomed to regard Glasgow as comparatively a modern
town, owing its present exalted position amongst the cities
of the earth to the commercial and manufacturing enterprise
of its citizens, and as a city vacant in annals reaching back
into the remote past; but the perusal of such a work as the
present is well fitted to correct such an impression.   It is
with no little pleasure that the citizen of Glasgow reads in its
pages of the social and medical life of our town in the 16th
century—a life full of freshness and vigour, and showing,
even at that early date, before the union of the crowns,
many of the elements of its future greatness.

The present volume reverses the order of things usually
found in biographical works; for while they begin with the
birth of their subject, this begins with his tomb.   The reason,
however, of this departure from the ordinary biographical

method is not far to seek—it evidently lies in the scantiness
of the material extant for writing a biography of the Founder
of our Faculty. In fact, when we consider how terribly
scanty the material has been, we wonder, indeed, how Dr.
Finlayson has got on so well as he has, and feel inclined to
give him all the more credit for his work. No doubt, when
regarded from a purely literary point of view, this may be
looked upon as a defect in a work on the life of Maister Peter
Lowe; but any criticism of this kind is quite conclusively
answered by the statement that in the present instance strict
accuracy is of more importance than literary elegance or
biographical continuity. Dr. Finlayson had to deal with his
facts as he got them, and we think he has dealt with them well.

But to return to Peter Lowe's tomb. We here reproduce
for our reader's benefit the inscription on the headstone,
although any of them may see it for themselves if they will
take the trouble to pay a visit to the High Church graveyard,
as we have already done, with great pleasure.

1612

M.

P . L

JOHN . LOW.   JAMES . LOW

DOCTOR PETER LOW,

The Founder of the Faculty of Physicians and Surgeons

Stay Passenger and viow this stone
For under it lyis such a one
Who cuired many whill he lieved
Soe gracious he noe man grieved.
Yea when his phisicks force oft failed
His pleasant purpose then prevailed
For of his God he got the grace
To live in mirth and die in peace
Heavin hes his soul his corps this stone
Sigh passengir, and soe be gone.

Ah me I gravell am and dust
And to the grave deshend I most
O painted peice of liveing clay
Man be not proud of thy short day.

As is to be expected, a very large portion of the book is
taken up with a discussion of the writings of Peter Lowe,
of which the best known are the "Chirurgerie" (1597), and
the "Spanish Sicknes" (1596). "Peter Lowe's reputation
beyond the neighbourhood of Glasgow, rests chiefly on his

work on 'Chirurgerie' (1597). This seems to have been the first original systematic treatise on the 'whole course of Chirurgerie' published in the English language, or, indeed, in any language in this country." We must refer our readers to the pages of Dr. Finlayson's book for further information as to these works, and we can assure them that they will derive both pleasure and profit from the interesting extracts which he has reproduced. The other published work of Peter Lowe is "The Booke of the Presages of deuyne Hyppocrates," and of unpublished writings we have (1) "The Poore Man's Guide"; (2) "A Treatise on Parturition, and on the Diseases of Married Women and Maidens, including a Section on the Diseases of Young Children"; and (3) "The Booke of the Plague."

With regard to the date of Peter Lowe's birth and death, and the incidents of his residence abroad and in Glasgow, Dr. Finlayson has given us all the information we are ever likely to have. The probable date of his birth was 1550, and of his death somewhere "between 20th December, 1612, and the beginning of 1614," so that he was between 60 and 65 years of age when he died. Some interesting incidents of his life in Glasgow are also recorded, such as his "coming under the notice of the Presbytery," and being sent to the "piller"— a punishment which did not seem to affect Peter very much. Peter Lowe's wife was Helen Weems, daughter of Mr. David Weems, "notable as being the first Presbyterian minister in Glasgow after the Reformation." It would seem, then, that his levity at the "piller" did not prevent his marrying a daughter of the "Parson of Glasgow." He had a son John, a grandson James, and a great-grandson Peter, a writer to the Signet in Edinburgh, whose children, William and Annabella, "died without issue, so that the family became extinct."

Peter Lowe obtained the charter of the Faculty from King James VI in 1599, and for further information we must again refer our readers to the exhaustive account of its foundation given by Dr. Finlayson at page 20 of his "Account."

Under the heading of "Name—Titles—Portrait" a vast amount of most interesting information has been gathered together, and Dr. Finlayson is to be congratulated on the new light he has succeeded in throwing upon "the greatest puzzle in Peter Lowe's titles"—viz., the meaning of the word "arellian." In all probability the force of "arellian" is that Peter belonged to the College of Orleans, the term being equivalent to an Oxford graduate calling himself "Oxonian."

The publishers have succeeded in doing full justice to the archeological importance of the author's subject, and the portrait and other illustrations are worthy of all praise. The portrait, reproduced in photogravure from that in the Faculty Hall, shows Peter to have been an aristocratic looking man, whose expression strongly reminds us of that of the reigning family at the time—the unfortunate Stewarts.

In the production of this book Dr. Finlayson has shown himself to be an archeologist of no mean order.

Historical Sketch of the Glasgow Southern Medical Society. By JOHN DOUGALL, M.D. Published by the Society for distribution among the Members. Glasgow: Printed at the University Press. 1888.

THE Southern Medical Society and Dr. Dougall are to be congratulated on this interesting work, which preserves the account of an origin and career decidedly worth recording. The most interesting character in the book is the first Secretary, Dr. Leech, who in the minutes or otherwise usually signed himself by his Latin synonym, *Hirudo officinalis.* The very title-page of the minute book shows his characteristic humour, and it ends with a prophecy. The Society began with a membership of 5, but the Secretary, in hope, wrote—" But despise not the day of small things. The tiny streamlet becomes at length the Majestic River. The Small Acorn, on being planted in A favourable situation, becomes at length the Majestic Oak." These words were humorously written by *Hirudo,* but an existing membership of 156 might almost seem to justify them, although the Society may scarcely claim the proud position of the Majestic Oak. Of the original five, all were office-bearers except one, who is characteristically designated " simple member." This foundation of the Society was in 1844, and at the first meeting there was a solemn conclave on the question of adding to the membership. The President, Dr. Jas. Stewart, opposed this on the ground " that any considerable addition would prove injurious to their present easy, social companionship."

Thus in pleasant fraternal intercourse the Society began. We may form an idea of the friendliness of the members from the fact that the meetings were daily, with more formal occasions once a month. The minutes commemorate not only the regular business of the Society, but abound in humorous descriptions of incidents connected with the members, in some

of which the fair sex come in for a share of observation. There were gay young bachelors amongst the members, and their proclivities did not escape friendly comment. A racy episode is that in which Dr. Campbell bethought himself of trying a newly invented gastroscope on a showman who was in the habit of passing a sword into his stomach. He interviewed the man amongst " the shows " at the foot of the Saltmarket, but all his persuasions were in vain, and the man abruptly ended the conversation by saying—" I know I can swallow a sword, but I'll be —— if I can swallow a trumpet."

Another racy minute is the following :—

" 8th December, 1844.

" Vice-President Mackenzie, Drs. Brown and Leech. General conversation and a professional conundrum, propounded by Dr. Brown, and which was deemed worthy of record :—

" *Ques.*—When may a man be said to be literally within himself ?
" *Ans.*—When he is confined in his bowels."

But the whole record is not occupied by mere flashes of humour. We have here much that is interesting historically, such as the origin of the movement for a hospital in the South Side, and there are quoted many tender sympathetic words concerning the deaths of members, some of whom are still remembered amongst us.

The stamp of quaintness and homely humour which was affixed on the Southern Medical Society has remained with it. There has been grafted on it also something of the allied poetic gift, a valuable possession for any corporate body. The Society at present boasts at least two poets, the author of this book not the least capable.

We may add that this too brief record is tastefully printed, and that the literary style is worthy of one whose pen is at times inspired by the lyric muse.

The Middlesex Hospital Reports for the Year 1888. London : H. K. Lewis. 1889.

THIS is again a volume of very great interest, and contains a record of much very useful and good work. An important feature in the present volume is the " Analytical Summaries of 754 cases of cancer for the seven years, 1882-1888," and, on looking over these, we find an interesting case of cancer of the stomach in which pylorectomy was performed. We believe it

will be of interest to our readers if we quote this abstract in full :—

"*Age.*—39. *Sex.*—Female. *C.S.*—Married at 26 ; 7 children.

"*Duration to Admission.*—9 weeks ago an attack of jaundice ; ever since she has been subject to vomiting and nausea, and she has emaciated rapidly. A lump in the epigastric region was first noticed two months ago.

" *Previous Health.*— Indifferent, dyspepsia several years ; rheumatic fever at 19.

"*State on Admission.*—Very emaciated, dark complexion, complains of flatulence, nausea and vomiting, worse after taking food. Just above, and a little to the left or right of the umbilicus, a freely movable nodulated mass the size of a hen's egg felt. Dulness over it on percussion. Pain often felt at this spot. Hepatic area normal. Mitral and aortic systolic murmurs.

" *Treatment.*—After a consultation it was decided to make an exploratory abdominal section. In the event of the growth being found free from important adhesions, and the adjacent organs and glands uninfiltrated, pylorectomy was to be performed : otherwise gastro-enterostomy or jejunostomy. The stomach having been washed out, the abdomen was opened by a transverse incision 4 inches long, having its centre over the tumour. There were no adhesions ; and no infiltration of adjacent parts. The peritoneum above and below the diseased area was divided between double rows of catgut ligatures. The pylorus and neighbouring parts being thus freed from their omental connections, a large flat sponge was passed beneath them. An oblique section of the stomach was then made with scissors, beginning at the small curvature ; this was carried through both walls for rather more than half their extent. Hæmorrhage was arrested by torsi-pressure forceps. As soon as the gastric incision was large enough, the stomach contents were removed with sponges on long forceps. Occlusion sutures were then introduced before the rest of the gastric section was completed. Whilst the section through the duodenum was being effected, the cut edges of the stomach were retained outside the abdomen by means of a couple of silk loops passed through the sero-muscular tissues. The union of the divided viscera was commenced by intro-ducing the posterior and lower sutures first. The part of the duodenum divided had not a complete peritoneal investment. Consequently at a certain part of the line of union the two serous surfaces were not in contact. This was a circumstance of importance, for it was here that the stitches subsequently

ulcerated through and allowed extravasation into the peritoneum. Lembert's suturing was alone employed for the ring sutures; and Lembert's alternating with Gussenbauer's for the occlusion sutures. The operation lasted nearly $2\frac{1}{2}$ hours.

" *Result.*—Death from extravasation and peritonitis on the 4th day after the operation.

" *Necropsy.*—Very emaciated. Perforation the size of a pea at the posterior and upper part of the gastric section. Consequent extravasation of gastro-intestinal contents into the peritoneum, and general acute peritonitis with effusion of puriform lymph. Stomach small and inclined to vertical position. The other sutures held well, and were surrounded by lymph. No enlarged glands or secondary deposits. Liver slightly fatty. Kidneys granular. L. pleural sac contained .28 ozs. of serous fluid, and the R. 10 ozs. No signs of pleurisy. Both lungs small and emphysematous. Old pericardial adhesions. Both auriculo-ventricular valves showed old thickening. Aortic valves incompetent, from extensive atheromatous and calcareous degeneration. Aortic arch atheromatous. No. 760 S.R., 1885. H.M."

In these 744 cases of cancer we notice that the disease occurred in the uterus, 160 times; in the breast, 166 times; in the tongue and mouth, 135 times; in the lip, 43 times; in the rectum, 64 times; in the œsophagus, 18 times; in the external genitalia, 35 times; in the ovary and testis, 11 times; and in the colon, 10 times. Among the 744 cases are included, 27 cases of rodent ulcer, and those interested in this somewhat indefinite and rather confusing disease may find something to enlighten them, although in the summary we find nothing about the histology of the condition.

Altogether the volume is a most interesting one.

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Medical Lectures and Essays. By GEORGE JOHNSON, M.D., F.R.C.P., F.R.S., Emeritus Professor of Clinical Medicine and Consulting Physician to King's College Hospital. London: J. & A. Churchill. 1887.

ALTHOUGH it is a couple of years since this volume was published, it is not too late to bring it under the notice of our readers, and to recommend it strongly for their perusal. It consists of a selection of the lectures and essays published by Dr. Johnson within the past thirty years, carefully revised and brought up to date, so as to present to the profession his matured opinions on the subjects treated of. His name is so well known for careful and thoughtful work of an original

character, that it is almost needless to say another word in recommendation of the volume ; but it may be well to indicate the nature of its contents.

The first few chapters are devoted to a consideration of the physiology of the circulation, and of certain phenomena connected with respiration, secretion, and absorption, the author's object being to prove that the key to the solution of some of the most important pathological problems is to be found in a correct appreciation of the power possessed by the arterioles to regulate and, under certain conditions, to entirely arrest the circulation of the blood.

There follows a very interesting and valuable chapter on the pathology and treatment of epidemic cholera, his experience of which he had already published in 1855 and in 1866. His views are so well known that we need not detail them here. But, the reading of his powerful advocacy of the evacuant treatment brings back to our mind the treatment of the early diarrhœa of cholera by rest in bed and laudanum, equally powerfully advocated by the late Dr. Fergus, and with quite as secure looking a basis in the way of successful results. To those of us to whom epidemic cholera is but a name, it would, should it ever be our lot to have to face the treatment of that disease, be a very difficult matter to decide which of these two masters we were to follow.

Lectures on delirium tremens, nervous disorders the result of overwork, the pathology of epilepsy, the pathology and treatment of rigors, hysteria, nervous apnœa, cases of various kinds of poisoning, foreign bodies in the air passages, the relation between croup and diphtheria, various laryngeal conditions, pneumonia, emphysema, cardiac and aortic lesions, &c., occupy a considerable space, while a large part is devoted to the subject of kidney diseases and tests for albumen and sugar.

It is thus apparent that these essays and lectures embrace all the special subjects with which Dr. Johnson's name has long been associated. It is difficult to lay one's hands on these in the forms in which they originally appeared, and hence we recognise that Dr. Johnson has rendered us his debtors by collecting the more important of his papers into a single volume, and presenting us thus with his most mature views. No one can consult these Lectures without finding something of practical value to him in his daily work, and on that account especially we would advise our readers to possess themselves of a copy. As regards the theories with which Dr. Johnson has enriched medical literature, and which he lucidly and powerfully upholds, while we may not admit

that they have all been verified, we must at least recognise their ingenuity and probability, and the fact that Dr. Johnson has always sought to turn them to practical service in the elucidation of the problems presented to every thoughtful physician by the cases that come under his care.

The Clinical Use of Prisms, and the Decentering of Lenses. By ERNEST E. MADDOX, M.B. Bristol: John Wright & Co.

THIS is a little book of very considerable value to the ophthalmic practitioner. It deals with a subject which is far too much neglected in our ordinary clinics—viz., the function of divergence and of convergence. There is no doubt that on anomalies of this function depend many cases of extreme asthenopia. Yet there are, we fear, many of our ophthalmic practitioners who rarely investigate their patient's power of convergence, and who are quite unable to estimate the amount of any abnormality.

Deficient convergence or divergence may in many cases be corrected by suitable prisms, or in less severe cases by the decentering of ordinary spherical lenses. Dr. Maddox' little book gives us in a nutshell all the information necessary to deal clinically with such cases.

The book is by no means a treatise on the formulæ of prisms, but it is an excellent guide to their use in ophthalmology. We think, however, that it would even be more useful were there a demonstration of the physics of the prism. Without that any directions given can only be, as it were, a rule of thumb by which the practitioner may be guided. In this department of practice, those who know physical optics as a science must always be more at home than those who content themselves with following special rules.

The author is strongly in favour of numbering prismatic glasses, not according to the apex angle, but according to the angle of minimum deviation. We should imagine that in this all who have any practical knowledge will cordially agree.

The table showing the prismatic effect of decentering any lens is remarkably useful, as it saves a great amount of calculation. We are glad to see the author advocates very strongly the adoption of temporary trial prisms. By this means, before fixing definitely on a pair of prisms to be worn, the patient has the advantage of trying the effect of several pairs of prisms.

We have much pleasure in recommending the book as a very good introduction to the study of prisms.

Congrès pour l'étude de la Tuberculose chez l'homme et chez les animaux. 1^{re} Session 1888. President—M. le PROFESSEUR CHAUVEAU (de l'Institut). Paris : G. Masson. 1889.

THE transactions of this Congress form a bulky volume, of very great interest and importance, and all the newest theories and facts will be found recorded in its pages. It is a significant fact that tuberculosis is exciting so much attention in France, and there can be no doubt that the ultimate result will be an entire revolution in our whole attitude towards, and methods of dealing with, this terrible scourge of humanity. We have heard much lately of the spread of leprosy, and influential committees, comprising very exalted personages, have been formed to deal with the subject. In our opinion there is far more need, so far at least as our home population is concerned, for our public men to deal with the spread of tuberculosis, and to endeavour to devise some means, legislative or other, of checking the fatal progress of this disease which is, in reality and truth, the leprosy of our modern life. Towards this end our French *confrères* have contributed not a little, and they have produced a volume which will rank as authoritative. The questions discussed by the members of the congress are of the very greatest import- ance ; among them are such as the following :—The heredity of tuberculosis in man and in the different species of animals ; the contagiosity of tuberculosis between man and man, and between animals and man ; means of distinguishing lesions caused by Koch's bacillus from those caused by other organ- isms ; the means of destroying Koch's bacillus, &c., &c. These are only a few of the subjects considered, but they will give our readers some idea of the widespread interest of the volume.

Handbook of Obstetric Nursing. By F. W. N. HAULTAIN, M.D., F.R.C.P. Ed., and J. HAIG FERGUSSON, M.B., F.R.C.P. Ed. With a coloured plate and diagrams. Edinburgh : Young J. Pentland. 1889.

IT is somewhat unfortunate that in Scotland the period of obstetric training has to be restricted to three months. Many of the women begin their course without any previous scientific or hospital training, so that the task of instructing them becomes an anxious one to the lecturer. The authors have had this fully in view, and while nothing of importance has been omitted, they have confined themselves to practical and

essential points. The book is written in simple language, and gives plain rules for the nurse's guidance. They have further prefixed a chapter on some important points in general anatomy and physiology, and appended a good glossary, both of which will be of great assistance to the class of women for whom this work is intended. The most important chapters—viz., those on the management of labour and of the puerperium are, perhaps, the best in the book ; they could hardly be improved. The importance of antiseptics and of absolute cleanliness is insisted upon in almost every chapter. The book is clearly printed in large type, and with its clear diagrams should be welcomed by every one engaged in the training of midwives.

Augenheilkunde und Ophthalmoskopie. By HERMANN SCHMIDT-RIMPLER. Berlin, 1889.

THIS is the fourth edition of a book, the first edition of which appeared in 1884. We so recently reviewed the third edition that we need not say more than that the fourth is in all respects a safe and ample guide to the study of eye diseases.

In passing, it may be mentioned that an American edition of this book has lately appeared under the editorship of St. John Roosa, M.D., and published by Messrs. Wm. Wood & Co., New York. The translation has been exceedingly well done.

MEETINGS OF SOCIETIES.

MEDICO-CHIRURGICAL SOCIETY OF GLASGOW.

SESSION 1889-90.

MEETING IV.—29TH NOVEMBER, 1889.

MEDICAL SECTION.

DR. GAIRDNER *in the Chair.*

AN EXPERIMENTAL RESEARCH AS TO THE GENERAL COMPARA-
TIVE ACTION OF THE NATURAL AND ARTIFICIAL SALICYLIC
ACIDS AND THEIR SALTS OF SODIUM.

BY DR. CHARTERIS (see *Journal* for December, 1889, p. 407.)

Dr. Gairdner referred to a discussion on the subject of salicin and the salicylates at Belfast some years ago, in which

he took part, and in which very confusing views were brought forward. This confusion might have arisen from differences in the preparations used. He considered that the use of salicin was a remarkable instance of the influence of theory on practice. M'Lagan, looking upon rheumatism as a miasmatic disease, and observing the prevalence of the willow in rheumatic districts, presumed that it might be an instance of the bane and the antidote flourishing together, and hence tried the willow preparations. While it was impossible to verify the theory, in practice it had proved a success.

Dr. Napier was much interested by the account Professor Charteris had given of his experiments, as he had seen a few years ago a number of cases in which unpleasant symptoms had arisen after the administration of salicylate of sodium. These cases had occurred chiefly in the persons of Highlanders (Highland servant girls, and others), a fact which was curiously confirmatory of certain Irish experiences quoted by Professor Gairdner. There might, after all, be something in the Celtic constitution involving increased susceptibility to drugs acting obviously on the nervous system. He had for some years given only the *natural* salicylic acid and salicylates, and had had no trouble with the drugs, except the usual difficulty in getting them retained by the stomach after a day or two's administration. It was interesting to find that Professor Charteris had succeeded in getting the offensive impurity isolated. It seemed to him, however, that the amount of the brownish powder separated was much too large to represent impurity only. A powder of which the fatal dose to a rabbit of 1 lb. in weight was as much as one grain, obviously contained more than the really active impurity. If this powder consisted of the poisonous constituent only the dose of it (and of the salicylate containing it) necessary to affect a man, bearing in mind the relation in weight between rabbits and an average man, would be enormous, and quite beyond any dose ever given to the human subject. Dr. Napier also referred to the rarity of symptoms of carbolic acid poisoning after giving salol (which is broken up in the system into its constituent carbolic and salicylic acids), this being so, even though the urine became very dark from the elimination of the former acid. This seemed to show that *pure* carbolic acid had a less poisonous action than the impurities with which it was so often associated in commerce. Professor Charteris' researches further showed how insecure was any reliance on the text-book accounts of the physiological or toxic action of salicylic acid; it was not improbable that many of the symptoms mentioned in such

accounts were due rather to carbolic acid impurities than to the pure salicylic acid itself. If these researches resulted in the discovery of a method whereby carbolic acid could be rendered chemically pure, and thus ensure the preparation of a pure salicylic acid from it, then a most important object would be gained, as the price of the "natural" acid and salicylate was such as to be prohibitive except in the case of moderately well-to-do patients.

Dr. Middleton expressed the pleasure with which he had listened to the paper, especially as it seemed to throw some light on some cases he had seen twelve years ago, in which bad results had followed from the use of the salicyl compounds. When these were first introduced, he had, as resident physician in the Western Infirmary, been very favourably impressed, in cases of pyrexia from various causes, with the results obtained by the administration of these compounds. With this favourable impression he had gone to Belvidere, and had there tried the same remedies in cases of enteric and typhus fevers. In at least two cases he had occasion to believe that, while the temperature was reduced, the general state of the patient was rendered worse, a condition of collapse ensuing. This he believed to be due to the impurity of the drug. He had never seen symptoms of coma ensue. In regard to the evil effects attributed to the salicyl compounds, it was, however, necessary to bear in mind that they were not always responsible for the delirium and other symptoms for which they were blamed. He had seen cases in which they were suspected, when it was ultimately proved that the symptoms were due to complications, such as acute pericarditis.

Mr. Clark thought that Dr. Charteris was to be congratulated on the direction his investigations had taken, and on the success of his appeal to direct experiment. It appeared to him that the results, so far, seemed to point to the impurity in the artificial salicin products being a derivative of the phenol, and probably of an impurity of that drug. Certainly it was important to have it thus definitely proved that there was so great a difference between the natural and the artificial products.

Dr. Charteris replied, and thereafter there ensued a conversation on evil effects arising from carbolic acid dressings, and from external applications of the bichloride solution.

GLASGOW PATHOLOGICAL AND CLINICAL SOCIETY.

SESSION 1889-90.
MEETING III.—9TH DECEMBER, 1889.

The President, PROFESSOR W. T. GAIRDNER, *in the Chair.*

I.—CONGENITAL ABSENCE OF ABDOMINAL MUSCLES.
BY DR. BEATH HENDERSON.

DR. HENDERSON showed a patient, aged 60, presenting a large prominence in the lower part of the abdomen, due to congenital weakness of the abdominal wall. The recti were fairly well developed in the upper part, but ended below the umbilicus in a narrow tendon. On each side of this there was protrusion, the movements of the intestines being easily seen through the thin parietes. On right side there was also what seemed a mammary gland. No scrotum and no testicles could be felt.

The following Committee was appointed to examine and report upon the case, viz. :—Mr. H., E. Clark, Dr., William Macewen, Dr. J. Wallace Anderson, and Dr. Beath Henderson.

II.—CASE OF SUPPOSED EMBOLISM OF THE SUPERIOR MESENTERIC ARTERY.

BY PROFESSOR M'CALL ANDERSON.*

T. C., aged 17, baker, was admitted to the Western Infirmary on 11th September, 1889, complaining of severe pain across the abdomen, with sickness, of about a fortnight's duration. Patient stated that he had always been delicate. Five years ago he had an attack of rheumatic fever, with pains in all his joints, which lasted for about six months. From that time he has always suffered from breathlessness on the least exertion, and has been subject to periodic attacks of epistaxis. These used to come on just before his school examinations. They were very severe, and always from the left nostril. For the last two years he has had no such attacks.

About the beginning of the present year he had an attack of pain in the abdomen, with great nausea. There was no vomiting, but he could take nothing but milk. At the same time his feet and legs became greatly swollen and red. He

* In the unavoidable absence of Dr. Anderson, the cases were shown by Mr. Wm. Jack, M.B.

had to keep sitting up in bed on account of the pain and shortness of breath. At this time he frequently passed blood in his motions, sometimes only a little, but at other times a considerable quantity. This attack lasted about five months.

He remained thereafter pretty well until about a fortnight before admission, when the pain in the abdomen returned, and persisted till his admission to the Infirmary. When the pains came on he felt very sick, but did not vomit unless he ate anything. From the beginning of the present attack until a few days before admission he passed considerable quantities of blood.

Since the beginning of the year his feet and legs have become swollen whenever he stood or sat for a long time.

Since admission he has had very little pain, and he can lie down in bed.

Physical Examination.—The apex beat is very diffuse and heaving, and can be felt in the sixth interspace, about an inch and a half outside the nipple line. The point of greatest intensity is in the fifth interspace, just outside the nipple line. The upper border of cardiac dulness is situated at the level of the third rib ; the right border is 2 inches to the right of the middle line ; the left, $1\frac{1}{2}$ inches outside the nipple line. At the level of the nipple the transverse measurement of the heart is $7\frac{1}{4}$ inches. There is a well marked aortic double murmur, the V.D. being the more distinct. Epigastric pulsation is well marked. The pulse is markedly jerking in character. The urine is normal. The spleen is normal. The lungs are normal but for a few moist râles at the left base. There was slight swelling of the legs on admission.

15th September.—Patient has complained to-day of great pain in the abdomen.

17th September.—Pain in the abdomen still persists, chiefly below the level of the umbilicus. It has been considerably relieved by fomentations and $\frac{1}{6}$ gr. of morphia subcutaneously. Up to this date there has been no hæmorrhage from the bowel.

24th September.—Yesterday morning diarrhœa came on, and in one motion blood was observed by the patient. At the same time severe pain was complained of.

Dr. Anderson suspected embolism of the superior mesenteric artery, because, although the hæmorrhage might be due simply to passive congestion, it is quite contrary to his experience to find such severe and agonising pain in connection with that condition.

A case somewhat similar to this was in his wards in 1879,

and in it the diagnosis was confirmed *post-mortem.* The patient had been admitted to hospital with bronchitis and emphysema, with enlargement of heart and mitral murmur. About six or seven days before death, he began to complain of pain across the epigastrium and in the region of the kidneys. This became violent and paroxysmal in character, with no positive physical signs except tenderness, which was much relieved on pressure. After a purgative, diarrhœa set in, with some vomiting of the contents of the stomach merely. On the next day, the diarrhœa continuing, the vomited matters were black and very fluid. Death occurred from exhaustion. *Post-mortem*—an embolism of the superior mesenteric artery was found, involving the colica dextra, ileo-colic, and vasa intestini tenuis branches. The portions of large and small intestine supplied by these were very dark in colour, and the mucous membrane was soft and pultaceous, and engorged with blood. These portions of bowel also contained a large quantity of blood. The left kidney had several embola of long standing.

In a paper on this case, Dr. Moyes (at that time one of the medical tutors), cited from Küssmaul the following points as the most important in establishing the diagnosis :—

1. A source exists from which the embolus might be derived.

2. Profuse, even exhaustive, intestinal hæmorrhage sets in, which may be due either to a real injury to the mucous membrane of the bowel, or to the hindrance of the mesenteric circulation.

3. There is a considerable and rapid fall in the temperature.

4. Pain in the abdomen is present, which may resemble colic and be very severe.

5. Tension and tympanitic swelling of the abdomen occur at last, and there may be fluid in the peritoneum.

6. Evidence of of embolism of other arteries having taken place, either before or at the same time as the superior mesenteric, may be present.

7. Palpation may reveal the presence of collections of blood between the folds of the mesentery.

Of course, the whole of these symptoms must not be expected in every case, and in the one just quoted, although the kidneys were the seats of emboli, there was no clinical evidence of that condition.

Dr. Finlayson thought the account of the symptoms scarcely warranted a diagnosis of such a definite character. In the case which Dr. Finlayson communicated to a medical society some years ago (see *Glasgow Medical Journal* [Ser. v], vol. v, p. 44), there was evidence of concurrent embolism in other arteries

within reach of examination, and this concurrence has been
held of great importance by authorities on the subject. In the
present case there was not only the absence of this confirma-
tion, or any confirmation from physical signs at any time, but
there was the presence of dropsy and other evidence of con-
gestion, which might have determined a congested state of the
bowel and bloody motions. Such complications seem to occur
in cases of heart disease apart from embolic lesions.

The repeated attacks of colicky pains (two within two
months) seemed to point to some other cause than embolism
as the explanation.

Dr. John Lindsay Steven agreed in the main with the
remarks that had been made by Dr. Finlayson, and asked Dr.
Jack what was the character of the blood that had been
passed from the bowel. He had no experience of such cases
during life, but from what he knew (*post-mortem*) to result
from the occurrence of embolism of the superior mesenteric
he would have expected a certain amount of obstruction of the
bowel, from paralysis of the muscular coat of the affected
portion, but so far as he could gather there was nothing of
this kind in the present case.

The President remarked that it was difficult to speak
offhand upon all the details of such a case, but in the main
he felt inclined to agree with what had been said by Dr.
Finlayson.

III.—CASE OF INTRA-THORACIC DISEASE, WITH PRESSURE SYMPTOMS.

By Professor M'Call Anderson.

This man was admitted to the infirmary on 16th November,
1889, with hoarseness of four months', cough of two months',
and expectoration of six weeks' duration. In the end of June
he caught a chill, and two days thereafter was attacked with
hoarseness, which he neglected, and two months ago a cough
began, and quickly increased in severity, so that he had to
stop work. The cough now became accompanied by expec-
toration of a clear, but thick sputum. It was frequently so
severe as to cause vomiting. The throat affection is not in the
least painful, nor has he had any pain in the chest. He suffers
from palpitation and from dyspnœa, especially on exertion,
which is relieved by sitting or lying down. His appetite is
good. The bowels are moved once daily. He has lost flesh,
and since the onset of his illness he has been subject to night
sweats. On examination, there is found slight dulness at the

right apex, with some flattening harsh breathing and prolonged expiration. On the left side there is prolonged expiration with sibilant râles. The heart sounds are normal, and the pulse equal on both sides.

The left pupil is dilated; and Dr. Reid, who examined the eyes, reports that the right nerve is pale and cupped at its margin, while the left fundus is normal, and there is nothing in the iris to account for the dilatation.

Dr. Walker Downie reports, after examining the larynx, that " on the left side the aryteno-epiglottidean fold is thickened and displaced to the right side, as if the result of some previous ulceration. The right fold is slightly thickened, although freely movable. The left vocal cord is fixed in the semi-abducted position. During phonation the right cord crosses the middle line to meet its fellow. This meeting is incomplete, and as the left cord is in a relaxed condition during phonation the voice is husky. The condition, then, is one of paralysis of the left vocal cord, complicated with thickening and displacement of the left aryteno-epiglottidean fold."

The breath sound is *markedly feebler on the left side* than on the right.

The patient bears on his neck the scars of old strumous disease. From these symptoms, dilated pupil, paralysis of left vocal cord, and feeble breath sound, Dr. Anderson diagnosed the existence of a tumour, solid or aneurismal, giving rise to pressure within the thorax. There is no mediastinal dulness, nor any physical signs of tumour whatever. Regarding the nature of the tumour there is at present very little clue. The strumous scars and the physical signs at the right apex suggest the possibility of a scrofulous affection of the bronchial glands. But, on the only occasion upon which the expectoration has hitherto been examined, the tubercle bacillus was not found.

IV.—STREPTOCOCCI IN PUS TAKEN FROM AN ACUTE ABSCESS FORMED AROUND A SIMPLE FRACTURE.

BY DR. WILLIAM MACEWEN.

Maggie L., aged 9, was admitted to Ward 22 on 5th November, 1889, with a simple fracture of the right femur about the middle third, accompanied by a great deal of bruising and extravasation of blood. The accident occurred about an hour previous to admission, her leg becoming entangled in the spokes of a carriage wheel.

History.—The family history was good, and patient had the usual exanthemata of childhood; in particular, she had

measles and scarlet fever. She was pale, thin, and underfed, and brought up in bad sanitary surroundings.

Examination of Part.—There was a simple fracture of the femur at the lower extremity of the middle third. The thigh was greatly swollen with extravasated blood. There was no wound, but there was an abrasion of the skin, fully an inch in length, situated under the anterior superior right iliac spine, and along the inside of the right thigh there were marks of bruising, with slight scarification of the superficial epithelial layers.

The fracture was put up in the usual manner, but from admission she was very excited, almost verging on delirium. On the fourth day her temperature was taken, and found to be 103·8°, and this increased on the fifth day to 104°, and accompanying it there was an anomalous diffuse dusky rash of a measly type, which was especially marked about the arms and legs.

There were no other symptoms indicative of measles, such as coryza, watering of the nose and eyes.

This rash had faded to a great extent at the termination of the first twenty-four hours after its appearance. On inquiry it was found that patient had had measles, and to the knowledge of the parents there was none in the neighbourhood.

On the seventh day the seat of fracture was examined, when it was found that the whole thigh had become greatly distended and fluctuant, a large abscess having formed under the fascia of thigh.

On 12th November, 1889, an incision was made into this abscess, which was situated beneath the fascia of thigh in the cellular tissue between the bruised muscles, and leading down to the broken extremities of the femur, which were found at the apex of a wedge-shaped cavity filled with pus. The periosteum was only removed from the fractured extremities of the bone, and was adherent and healthy about an inch above them. The medulla, after washing the broken extremities in antiseptic solution, seemed healthy. The abscess, which extended superficially to near the trochanters, contained at least ten ounces of pus, besides partially disintegrated blood clot. A portion of the pus, removed at the moment of opening the abscess, was dried, stained, and submitted to microscopic examination. In this pus abundance of streptococci were found, some of them inside of the pus corpuscles. There were other forms of micrococci, groups of staphylococci, but no cultivations were made.

The cavity was washed out with an antiseptic solution, and

three days afterwards the temperature, which was gradually falling, became normal, and has remained normal since. The subsequent amount of discharge was very little. The dressings had to be changed on three occasions, not on account of discharge, but because they had been stained with urine.

This is the first case in which Dr. Macewen has seen extensive suppuration occurring at seat of simple fracture, and therefore it is presented.

REPORTS OF HOSPITAL AND PRIVATE PRACTICE.

PRIVATE PRACTICE.

(Reported by ROBERT ANDERSON, M.B., C.M.)

NOTES ON A CASE OF LOCOMOTOR ATAXY TREATED BY SUSPENSION.—[Under the care of Professor M'Call Anderson.]

The patient, a ship carpenter, æt. 45, was admitted into Dr. Anderson's ward in June last, with symptoms of locomotor ataxy of nine years' duration. At that time the ataxy was well marked, and the deep reflexes were absent. Numbness extended as far up as the waist, where the girdle sensation was present. There was constipation and difficulty of micturition. Sexual power was gone. Shooting pains occurred about once a fortnight, and, in addition, he complained of constant pain in the lumbar region.

This patient was treated by Charcot's suspension method. In all, he was suspended fourteen times, the duration increasing gradually from a half to three minutes. After each suspension he complained of pain in the cervical region of the spine, which, however, soon passed off.

After each suspension his powers of walking and standing and his sensation were tested. Though he stated that he could walk much better, yet no marked improvement in his gait could be noted. The constipation and difficulty of micturition disappeared, and sexual power returned. Only on one occasion did he suffer from shooting pains in his legs after this treatment was commenced, and the pain in the lumbar region disappeared after the first few suspensions.

The patient was seen again on 2nd December, when he stated that he continued to improve after leaving the hospital. Five weeks ago, however, he had a shivering, and the shooting pains and the pain in his back returned.

ABSTRACTS FROM CURRENT MEDICAL LITERATURE.

PHYSIOLOGY.

By WILLIAM SNODGRASS, M.B., &c.

Notes of the Proceedings at the International Physio-logical Congress at Basle. (*Continued.*)—In addition to the papers mentioned in the last number of the *Journal* as read on the first day of the Congress, the following should also be mentioned :—

MM. CHARRIN and RUFFER (Paris) contributed a paper on " The Materials which, when introduced into the Blood Stream, lead to an Elevation of Temperature," with special reference to substances produced by microbes such as the bacillus pyocyanicus.

KNOLL, of Prague, showed "Curves of Blood Pressure in the Pulmonary Circulation." In dyspnœa the pressure in the pulmonary artery remains almost unaltered. If it rises, there is a simultaneous fall of pressure in the aorta. In anæmia of the brain the pressure in the aorta rises from contraction of the arterioles in the systemic circulation, and so less blood passes to the pulmonary circulation ; but the pressure in the pulmonary artery either remains unchanged, or there appears a characteristic wave-movement, with at first a slight fall, followed by a long-continued positive wave. On the other hand, alterations in pressure, arising from stimulation of the nerves of the heart, are similar and cotemporaneous in the systemic and pulmonary systems.

SECOND DAY.

KRONECKER and GERBER (Berne) showed "Experiments on Swallowing in Dogs." in which the time between the movement of the larynx and the appearance of the bolus in the stomach was estimated. Fluid appeared at first after 5 to 6 secs., and later after 4 to 5 secs. If a small quantity were swallowed, it was frothy when it appeared in the stomach ; if a large quantity, it came in a stream. A solid body swallowed dry appeared in 11 secs. ; taken with water, in 9 secs., the water appearing before the solid. When swallowing was excited by stimulation of the laryngeus superior, water appeared in 3 or 4, solids in 9 secs.

HERMANN (Königsberg) gave a report of " An Experiment on the Physiology of the Intestines." A loop of the small intestine of a dog was isolated, cleaned out, and closed, and the continuity of the bowel restored. The animal was killed in about three weeks. Then the isolated portion was found to be filled with a greenish gray mass exactly resembling fæces, but having no remains of bile or food. About 1½ ounces would appear in 24 hours in the whole short intestine of a dog. Hermann supposed this material to be secreted by the walls, and that it constitutes the main substance of the excrement, in which the remains of the food are enclosed as in a pill mass. Heidenhain, of Breslau, thought that the material was due rather to desquamation than to secretion.

HERMANN (Königsberg) also showed phonophotographic curves. Vowels, consonants, &c., were sung against membranes of various substances, to which a small mirror was attached, by means of which a ray of light was reflected on to a rapidly revolving cylinder covered with a very sensitive bromide of silver paper. Very beautiful curves, showing the vibrations caused by whole songs, were thus obtained. These have still to be enlarged and measured.

HORSLEY (London) gave an account of experiments made along with GOTCH (Oxford) on electrical variations in the spinal cord from stimulation of the cerebral cortex. If in apes a point of the cerebral cortex is stimulated by which strong movements of the posterior extremity can be excited, after the

sciatic nerve has been isolated, cut through, and brought into contact, by longitudinal and transverse sections, with the nonpolarisable electrodes of a capillary electrometer, movements of the meniscus are obtained corresponding in time to the movements of the muscles obtained when the sciatic nerve was intact. If now the spinal cord be cut through in the lumbar region, the proximal end lifted out of the spinal canal, carefully kept from drying and cooling, and the electrodes be applied to longitudinal and transverse sections, negative variations will be observed on stimulation of the cortex at like period as in the sciatic nerve. During a short period of stimulation the meniscus remains in a negative position, and on removal of the stimulus a series of short negative variations appears.

MINKOWSKI (Strasburg) gave a report of experiments made with VON MERING (Strasburg) by which diabetes mellitus appeared in dogs after extirpation of the pancreas. If the pancreas is wholly removed the diabetes is persistent, 5 to 10 per cent of sugar appearing in the urine during starvation, and still more if food is given. Death from inanition follows in several weeks. In the latter stages acetone, acetic, and oxylactic acids appear, the blood contains much sugar, glycogen disappears, and the liver undergoes fatty degeneration. If any part of the pancreas remains, diabetes does not appear. A dog was shown from which the greater part of the pancreas had been removed, and which had not become diabetic; two days before, the atrophied remainder was removed, and sugar appeared and remained in the urine.

DASTRE (Paris) made the following communications :—

(1.) "The Last Reflex during Anæsthesia." If the mucous membrane of the upper lip of a dog be stroked with a feather, a well marked movement of the chin part of the under lip will be seen even after the corneal and conjunctival reflexes have disappeared.

(2.) "Anæsthesia from a Combination of Atropin, Morphia, and Chloroform." Dastre showed a dog that was thus brought into complete anæsthesia by breathing only a few c.cm. of chloroform.

(3.) Cholecysto-intestinal fistula." The gall bladder is brought into communication with the small intestine in an oblique manner. In an animal so operated upon fat is not emulsified by the pancreatic juice alone, but only after it comes in contact with the bile. The *rôle* of the latter should, therefore, not be neglected.

(4.) "Operation for biliary fistula."

P. LANGLOIS (Paris) and CH. RICHET (Paris) gave a report of experiments on the influence of chloral on the strength of the movements of respiration. In anæsthesia from chloral the force of inspiration is slightly, that of expiration notably, diminished. The pressure of 1 to 2 cm. of mercury is sufficient to produce asphyxia during expiration—an important point for surgeons to notice.

RICH. EWALD (Strasburg) demonstrated several physiological instruments.

VON FREY (Leipsic) spoke about "reflected waves in the arterial system," and showed an experiment to prove that waves might be reflected.

J. V. KRIES (Friburg) spoke about an investigation of the pulse by means of gas-tachygraphia. The hand and forearm were enclosed in a cylinder as in the plethysmograph, the interior of the cylinder being in connection with a supply of gas which fed a flame. The height of the flame varied with the pulse movements. The movements of the flame were photographed. Curves thus obtained differ from those got with the sphygmograph, and disclose, according to Kries, the reflection of the pulse wave from the periphery.

HÜRTHLE (Breslau) discussed the question, "Whether Reflected Waves are present in the secondary pulse waves," on the ground of experiments in which the pulse waves had been taken simultaneously at widely separate points of the arterial system. He concludes that all the secondary waves are centrifugal, and not reflected. Hürthle also showed curves showing variations of pressure in the left ventricle and beginning of the aorta. The curve of intraventricular pressure may be divided into two parts, corresponding to systole and diastole; and that of systole, again, into an ascending part and a plateau. The plateau

varies in length, and may disappear if the heart is weak. Comparing intra-ventricular with aortic pressure, it appears that there is no period of residual contraction. The secondary waves are systolic and diastolic, the latter beginning with the dicrotic wave. The dicrotic wave coincides with a fall of the intraventricular pressure.

The afternoon of the second day was devoted to demonstrations of micro-scopical specimens, experiments, and physiological instruments.

Third Day.

Roger (Paris) spoke on "The Protective *Rôle* of the Liver," and said that if others had failed to confirm his results, it was because they had used too concentrated solutions, or had injected too quickly. The poison should be introduced gradually, so as to approach as far as possible the conditions of intestinal absorption.

W. P. Lombard (Worcester) spoke on "The Influence of Fatigue on Voluntary Muscular Contraction." If we cause a voluntary muscle to contract repeatedly, and each time to lift a weight with a most strenuous effort, the mechanism concerned in the process becomes fatigued, the contractions lose their power, and after some time the weight is scarcely moved. If, however, the work is continued, power gradually returns. The repetition is, however, of short duration ; there alternate periods of almost complete loss of power with times of returning activity. The investigation shows that the seat of the alterations which occasion the periodicity is in the central nervous system ; that the periods do not depend on alterations of the strength of the will ; that the alterations happen independently of one another in the mechanism concerned in the contraction of each individual muscle.

Mosso (Turin), in the discussion upon this communication, brought forward the following experiment :—If by bending the finger a weight is raised always to the same height, and if, after about the 16th time, the motor nerve (the median) is suddenly tetanised by a current of such strength as is hardly able of itself to move the finger, the next voluntary impulse will be ineffectual. He takes this as proof of peripheral inhibition of the nerve to the muscle influence.   Heidenhain (Breslau) suggested that it was a reflex inhibition from sensory stimulation.   Mosso advanced against this the shortness of the time which intervened between the tetanising and the inefficiency of the will.

A. Waller (London) described his experiments on the electromotive appearances in the human heart, and showed photograms of pulse curves obtained by the capillary electrometer.

P. Loye (Paris) spoke upon the secretion of urine by birds. To collect all the urine the cloaca is drawn out, and the entrance to the ureters laid free. A goose of 3 kilos., when getting as much water as it would take, gave 2 litres of urine daily ; a duck as much as 1 litre. This urine is easily rendered fluid and translucent. If the urine is less in quantity, it is white and doughy ; and when the diet is vegetable, the urine is of alkaline reaction and free of urea. The insoluble part of the doughy urine is seen by the microscope to consist of masses of coiled threads, which are bound together by a substance analogous to that of hyaline tube-casts.   About 80 per cent of these consists of uric acid, in the form of a basic urate of ammonia.

Denys (Louvain) made communication as to "A New Ferment Formation in Blood." In blood collected antiseptically and preserved in an incubator, no peptone is formed ; but if alcohol, chloroform, or phenol is added, peptone is formed and the fibrine dissolved, and Denys attributes this to a ferment from the blood mixed with these substances. This formation only takes place if the reaction is faintly alkaline. He directed attention to errors which might arise if phenol, chloroform, &c., were mixed with culture fluids to make them antiseptic. Rohmann (Breslau) took this opportunity of referring to experi-ments of his own, according to which it appeared that blood collected with strictest antiseptic precautions contains a ferment which converts starch and glycogen to maltose and dextrin.

Fano (Genoa) spoke upon "The Function of the Thyroid." Complete

extirpation of the thyroid causes cachexia by poisoning of the blood. The function of the thyroid is to destroy the poison.

HERZEN (Lausanne) showed a dog which exhibited no anomalies of movement, although the motor areas of the cerebral cortex had been removed from both sides. The extirpation of the one side was performed on the first day after the birth of the animal ; of the second, a month later. A condition of the success of the experiment is that the first operation must be performed so early that consequent destruction of motion does not appear.

GAD (Berlin) demonstrated the results of an investigation carried out along with J. F. HEYMANS on the influence of temperature on muscular contraction in the frog. The individual contraction occasioned by supermaximal stimulation varies in the height and form of its course, as the temperature passes from $30'$ to $0°$ C. in a more marked way than has been hitherto supposed. The minimum height of lift and development of tonicity lies, in a striking way, at $19°$ C., the absolute maximum at $30°$ C., and a lower relative maximum at something near $0°$ C. This latter maximum is of importance. It discloses a paradox, for we must regard the temporary condition of the muscle as dependent upon a chemical process. It is difficult to suppose that a chemical process can have a greater intensity at $0°$ C. than at $19°$. By the help of a hypothesis advanced by Fick, we can eliminate this paradox. We may suppose that the temporary condition of the muscle is dependent upon the presence of an intermediate substance in the oxidation of glycogen to carbonic acid and water. This substance may perhaps be lactic acid, and by its presence the contractility of the muscle may be increased. Both chemical processes—the formation of the lactic acid from glycogen, and the further oxidation of the lactic acid—may diminish continually from $30°$ to $0°$ C. ; and if the second process is delayed by low temperatures, there may be an accumulation of the intermediate substance, which gives rise to contraction in the muscle. Above $30°$ the height of lift and the tonicity developed diminish with rise of temperature, and they disappear *before* the beginning of heat rigidity. The interval, which has been hitherto overlooked, can only be plainly demonstrated by careful alteration of temperature, so that single stimuli do not produce a series of contractions.

The latent period and the duration of contraction diminish continuously from $0°$ to $40°$ C. In tetanus the maximal initial contraction and tonicity are at $30°$ C., but they very quickly show a great falling off. At $19°$ C. the greater power of summation of stimuli more than compensates for the diminished effect of individual stimuli ; and, moreover, at $19°$ the diminution of the amount of tetanic contraction through fatigue comes later, and the appearance and disappearance of tetanus is much quicker than at lower temperatures, so that, as a whole, the best condition for the activity of the frog's muscle for the needs of the organism must lie at about $19°$ C.

R. DUBOIS (Lyons) applies the term " photodermic function " to the power which animals devoid of eyes have of reacting by means of motion to light. Dubois has studied this in *pholas dactylus*. The pigmented epithelial layer of the syphon of this acephalous mollusc is sensitive to light, and transmits an impulse directly to muscular elements. The latter contract if light falls on the epithelium, and through this contraction the nerves are mechanically stimulated, and reflex movement of the syphon takes place. The contraction varies with the intensity and colour of the light, with the length of time of exposure to light, with the temperature, and with fatigue. No colour seems specially favourable to its vitality.

COPOLLA (Messina) showed a new method of estimating rate of absorption. He injects, under the skin of the rabbit's ear, 1 c.c. of peroxide of hydrogen. A few seconds after, little bubbles of gas can be seen, which move forward in the vessels of the ear along with the blood. A similar appearance may be observed in the portal vein and lacteals when the peroxide is introduced into the bowel of a dog.

ALBERTONI (Bologna) discussed, under the term " acoustic daltonism," the observation made by him that colour-blind persons also show typical defects

of the musical sense. Those blind to green or to red make mistakes upon different tones.

KEMP (Brooklyn) spoke on the coagulation of blood which is bound up with destruction of blood corpuscles.

STEPHANI (Sienna) made a communication "On the Physiology of the Commissural Fibres." If one cerebral hemisphere of a pigeon is extirpated, the eye on the opposite side is devoid of sensation. If, then, the eye with which it sees is enucleated, the bird appears for some days to be completely blind ; the power of sight returns gradually. The remaining eye has therefore a direct relationship with the hemisphere of the same side, whether from incomplete crossing of the optic nerves or through means of the commissure which joins the two optic lobes. Stephani decides in favour of the latter alternative, because if, from the pigeon so operated upon, the optic lobe be removed on the same side as the cerebral hemisphere and the eye, blindness again arises and remains always.

CAPPARELLI (Catania) spoke of the effect of Esmarch's bandage on the pulse. The sphygmogram of a normal individual is completely altered if the other arm is deprived of blood by a bandage ; the beats of the heart are altered. This is due not merely to the quantity of blood sent back, but the compression of the bandage brings fluids of the tissues into the circulation which are the main cause of the alteration.

HERTER (Berlin) spoke of "The Influence of the Manner of Preparing Flesh on its Digestibility." He has found by experiments that the albumin of raw beef is more digestible than when boiled but in small quantity, because here the connective tissue is completely dissolved. This difference holds also for fish. Smoked flesh is as digestible as raw flesh ; but when exposed to the temperature of boiling water, it suffers the same loss of digestibility as boiled flesh. Fat exercises no unfavourable influence on the artificial digestion of albumin.

NOVI (Bologna) spoke on " Dehydration of the Brain." Intravenous injection of a 10 per cent solution of common salt causes in dogs cramps or tetanic convulsion, which is to be attributed to loss of water by the substance of the brain.

M. P. LOYE, of Paris, recalled the fact that M. R. Dubois had expressed the view that anæsthesia from chloroform and ether arises from dehydration of the brain substance.

ROSENTHAL (Erlangen) discussed with two diagrams the method of calorimetry employed by him, and the relations between heat production and tissue metabolism.

The Congress is to meet again in three years. There were 123 gentlemen at this meeting, of whom America sent 6 ; Belgium, 6 ; Germany, 24 ; Great Britain, 19 ; France, 18 ; Italy, 10 ; the Netherlands, 1 ; Austria, 7 ; Portugal, 1 ; Roumania, 1 ; Russia, 4 ; Sweden, 3 ; and Switzerland, 23.

MEDICINE AND PATHOLOGY.

BY R. STEVENSON THOMSON, B.Sc., M.B., C.M.

The Earliest Symptoms of Hereditary Syphilis.—Miller (*Jahrb. f. K.*, xxvii, 4 ; *Archives of Pediatrics*, December, 1888).—The recognition of the earliest symptoms of congenital syphilis in small children, in default of any history pointing in that direction, is often surrounded with great difficulty, for they may appear as pemphigus, roseolæ, maculæ, papulæ, rhagades of the mouth and anus, excoriations and ulcers of the skin, rhinitis, laryngitis, gingivitis, ulcers of the tongue, pseudo-paralysis of the extremities from osteochondritis, &c. The difficulty is complicated by the combination of various symptoms, which is not infrequent, different portions of the skin showing

entirely different phenomena. The fact that miscarriages so very frequently result from the marriage of syphilitics throws light upon the cognate fact that many infants who are the subjects of congenital syphilis are thin and atrophic; in fact, the author states that he has come to consider the atrophic condition as a most important suggestion that syphilis is present, and an indication that the child should not be nursed by any one but his mother. If syphilis be latent, the symptoms are likely to appear in the course of the first two months. In syphilitic infants it is noticeable that the navel stump, instead of dropping off on the fourth or fifth day, as is normal, delays until the second or third week, exposing them to navel inflammations and septic infections. Icterus of the new-born is greatly prolonged in such infants, the skin is undeveloped and tender, as are also its underlying connective tissues and sweat-glands. Tissue changes are sluggishly accomplished, oxidation is defective, the tissues in general are poorly nourished and deficient in vitality, and hence it is not surprising that the external symptoms of syphilis do not appear as early as in those children who are more mature and in better physical condition. Zeissl, Kassowitz, and the author have found by study of large numbers of cases that the external phenomena appear in more than 50 per cent of them during the first month. In 58 per cent of the author's cases rhinitis appeared as the first symptom of syphilis, and pemphigus in 25 per cent. Should a new-born infant suffer from nose-bleed, it would be very suggestive of hereditary syphilis or diphtheria rhinitis. These two diseases may be readily confounded, and are not uncommon in foundling asylums. The diagnosis will be clear enough within one or two days, if diphtheria be present. If the nose be sunken in, no other suspicious symptoms are necessary to make a diagnosis of syphilis. If pemphigus be of syphilitic origin in a given case, it is prone to affect the skin of the palmar and plantar surfaces and the fingers and toes; it also attacks the folds in the groins, the axillæ, and the neck. Syphilitic pemphigus is a far more dangerous condition than the ordinary variety, and may speedily end fatally, the removal of large portions of skin and subsequent ulceration producing fatal exhaustion. Syphilitic pneumonia in premature infants is of no diagnostic value in determining syphilis, and is differentiated with great difficulty from other forms of pneumonia. Simply desquamation of the skin is common to all new-born infants, and even if rather free, cannot by itself be taken as an evidence of syphilis. The desquamation of epithelium upon mucous surfaces is also a normal process, but may develop into the formation of fissures, ulcers, erosions, and aphthous formations. If syphilis is present, such conditions are important means of diagnosis, but they often exist apart from syphilis. Ulcers of the mouth, the gums, the palate, fissures of the nose, the lips, and the anus, are well known conditions with and without syphilis. Laryngitis is a symptom in 17 per cent of cases of syphilis, but in very many instances it is only the result of a cold. The author does not lay so much stress upon cranio-tabes as a symptom of syphilis as does Parrot. He thinks it is only an evidence of poor nutrition, and that the bone will quickly harden if the child is properly fed. It is in his opinion more frequently an evidence of rachitis than of syphilis. Disease of the lymphatic glands has not the same significance in hereditary that it has in acquired syphilis. In 29 per cent of the author's cases there were, however, swellings of the glands. This was considered the result of local irritation, rather than one of the effects of the poison which had per- meated the system. The maculo-papular eruption was observed to be the most frequent symptom of congenital syphilis. It appeared either upon the skin or the mucous membrane in 74 per cent of the author's cases. It was the first symptom in 24 per cent. The lower extremities were most frequently involved, though it sometimes appeared first upon the hands, the fingers, and the face. It came in single spots, far from each other, the colour varying between a cherry-red and a dark violet. It is to be distinguished from the exanthema of rubeola by its frequent appearance upon the feet, and not upon the face. There is also an absence of fever and of redness of the pharynx and hard palate, also of the other distinctive symptoms of measles. An erythema

is suggestive of syphilis only in cases in which true syphilitic papules begin to effloresce upon it. The author agrees with Parrot, that the vesicular eczematous form of congenital syphilis is not seen in small children, though simple eczema may occur among syphilitic children. Pustular syphilides were never seen, but in a few cases they were met with in children two or three months old. Onychia and paronychia were seen in 23 per cent of the cases, and in 4 per cent they were the earliest symptoms ; other affections of the finger nails were of rarer occurrence. There is nothing peculiar about the expression of the face in syphilitic infants, a pinched and wan appearance being common to all who are premature and atrophic. Pseudo-paralysis of the extremities is extremely characteristic of congenital syphilis, and in the absence of other symptoms may be considered diagnostic ; it is of rare occurrence, however, and was seen in only 7 per cent of the author's cases, the upper extremities being affected more frequently than the lower.

Cerebro-spinal paralysis is yet more rare, and when it occurs no voluntary motion is possible, while in pseudo-paralysis motion is possible, but is always attended with pain in the ends of the bones or the joints.

The Injections of Testicular Fluid.—At a meeting of the Biological Society of Paris, held in July, 1889, M. Variot related some experiments performed upon three men who had become, from various causes, much reduced in strength, and aged respectively 54, 56, and 68 years. Fluid obtained from the mashed testicles of rabbits and guinea-pigs was injected under the skin of the abdomen. The results of the first injection were in all three cases satisfactory. Sixteen additional injections were made. These were painful, but not hurtful. The injections were invariably followed by a sense of illness, but without fever. The results were, in every case, a condition of increased excitability of nerve power, increase of muscular power, excitation, and increased regular action of the digestive tract, with slight excitation of brain power. Increased virility followed in two of the cases. The observer felt in doubt whether to attribute the results to a form of suggestion or to the direct action of the injections.—(*Deutsche Med. Zeit.*, 19th August, 1889.)

The Gastric Juice in Phthisis.—In the St. Petersburg weekly *Vratch* for 1889, p. 349, Dr. S. S. Grüzdeff published a paper on the condition of the gastric juice in phthisical patients, based on ten male cases which came under his observation in Professor V. A. Manassein's clinic. Having pumped out a certain quantity of the juice, the author examined it with regard to its digestive power and the proportion of free hydrochloric acid. The latter point was determined after a very easy method recently proposed by Dr. Sjösquist, of Stockholm. This method consists, briefly, in transforming free hydrochloric acid into barium chloride, by adding carbonate of barium to the juice, and thus estimating the amount of barium used up by the bichromate of potash method.

In all, sixty-four experiments were made on ten patients, and the results arrived at are :—

1. In an overwhelming majority of cases the gastric juice of phthisical patients contains a much smaller proportion of free hydrochloric acid than that of healthy persons, and hence the digestive power is much below that of a healthy juice. 2. The changes are in direct proportion to the pulmonary lesion. 3. The effect of the febrile condition on the juice seems to be inconstant, but at the most its influence is subordinate, and when the phthisical condition is very grave, the influence of the temperature becomes imperceptible, and hence the attempts to improve digestion by the administration of antipyretics were not attended with success ; the proportion of the hydrochloric acid, and the digestive power of the gastric juice, remaining unaltered. 4. As a rule, the acidity of the juice is inversely as that of the urine, though occasionally both urine and juice are highly acid. The author suggests that these changes are directly due to some early lesions of the gastric secretory nerves,

though they are heightened by the anæmia and exhaustion incident to phthisical patients.

Bacteria : their Relation to the Diarrhœal Diseases of Infancy.—Dr. L. E. Holt (*New York Medical Journal*), remarks :—

1. We accept, then, the doctrine that we are concerned most of all in the gastro-intestinal disorders of infancy, with the development of abnormal bacteria, but as the first step, there is a failure of complete digestion and perfect absorption.

2. Mechanical diarrhœa, from the presence of foreign bodies, or food which acts as such to infantile digestion, and that resulting from the ingestion of poisonous ptomaines, are probably the only varieties to be excluded from this class.

3. The anatomical changes are those of inflammation of the gastro-intestinal mucous membrane ; but the lesions are the results, either directly or indirectly, of the micro-organisms. Since micro-organisms are found in numbers only superficially, except where ulcers exist, it seems most likely that their action is an indirect one through their ptomaines.

4. As to the exact nature of the processes of putrefaction which take place in the intestine, and the bacteria which produce its different forms, we are yet almost in entire ignorance.

5. One clinical form of diarrhœal disease—true cholera infantum—has many features which point to a specific germ as a probable cause.

The indications for prophylaxis and treatment follow from the above observations. Two things are essential to active bacterial growth—the entrance of living germs in numbers, and a proper soil for their development. Prophylaxis must have regard to both these points.

Germs are to be excluded by the use of sterilised milk for all children under two years of age, by absolute cleanliness of bottles and everything with which the milk comes in contact, and by securing pure air. Tompkins found in Leicester, England, that in one section of the town, where diarrhœal diseases were very prevalent, there were from three to six times as many bacteria in the air as in other sections. The water supply was the same for all, and the food not essentially different.

Equally important is cleanliness of the mouth. Van Puteren found in infants suffering from thrush that the number of bacteria in the stomach was forty times as great as when this condition was absent.

To secure a soil unfavourable for bacteria we must have healthy digestion and absorption. This means a great deal. To secure it we must, in the first place, build up the infant's constitution ; secondly, food suited to the power of the digestive organs should be given ; thirdly, regularity in feeding must be insisted on, and night nursing and feeding stopped as early as possible ; fourthly, the stools should be inspected to see whether what is given is properly absorbed ; fifthly, all minor derangements should be attended to ; sixthly, during the hot summer season the amount of food should be materially reduced, and infants should be allowed water freely.

As to treatment, three distinct indications present themselves :—

1. To nourish the patient.

2. To combat the abnormal bacterial growth.

3. To treat the lesions.

All these indications must be considered if success is to be the result of our efforts. The force of the different indications may vary in different stages of the morbid process. Thus, early in the disease the second indication may be the most important, while, later on, the third indication comes into great prominence.

In all stages we have to deal with a very complex process, and its management will never, I think, be reduced to so simple a thihg as the discovery of a pathogenic microbe and the giving of its appropriate germicide.—(*Archives of Pediatrics*, September, 1889.)

GYNÆCOLOGY AND OBSTETRICS.

By E. H. LAWRENCE OLIPHANT, M.D.

Breech Presentation: Curious Error in Diagnosis. — Dr.
Loviot, at the June meeting of the Soc. Obst. et Gynæcol. de Paris (*Nouvelles
Arch. d'Obst. et de Gynæcol.*), described a curious mistake into which he had
fallen along with a medical friend. Two months previously he had been called
by Dr. X. to see a lady, aged 40, who was at the eight and a half months of
her first pregnancy. A presentation of the breech had been diagnosed, and
this was now found to be impacted. Dr. L. proposed to anæsthetise the
patient and turn the child, but as this seemed contrary to the desire of the
patient herself and her husband, as well as of the medical attendant, he abandoned
his intention, and seems to have left the case. Some weeks later he was again
sent for by Dr. X., who wrote telling him that the os was completely dilated,
that the meconium was escaping per anum, and that the buttocks could be
easily made out. On his arrival Dr. Loviot found the patient's external geni-
tals covered with meconium, and her bladder much distended. By abdominal
palpation the position was found to be right sacro-anterior. On vaginal
examination, a small cap-shaped orifice was found about the centre of the
pelvic cavity, and this had firm resistant edges which, however, did not pro-
ject at all. He found, however, that the orifice was not at the bottom of a
cleft, but on the same plane as the supposed buttocks. On further examina-
tion, he found that all round the finger's further progress was arrested by a
cul-de-sac. The reporter does not say how he came to make the same mistake
as his colleague on the first occasion, in fact, on several occasions, as he seems
to have seen the patient more than once during her threatened labour. The
labour terminated naturally for the mother, but the child was stillborn from
delay in the birth of the head as he had apprehended, from the fact of the
patient being so old a primipara.

Dr. Charpentier referred to a case recently recorded in an American journal,
where the converse mistake was made, and where the accoucheur dilated the
child's anus to the extent of admitting three fingers. We have heard this told
as a story of an eminent London surgeon in his student days in Edinburgh.

Omphalorrhagia Neonatorum Spontanea. — Under this title the
Centralblatt für Gynæcologie, No. 35, 1889, quotes a case recorded by Dr.
Tross, of Carlsrue. The patient was an infant of five days old, apparently
in good health; but a few hours before the separation of the cord hæmorrhage
from the umbilicus set in. Dr. Tross made out that this came from a single
vessel, which, however, he failed to ligature. The vessel was transfixed with
a needle, but free hæmorrhage occurred from the punctures. The whole
umbilicus was then drawn forward with a forceps and ligatured *en masse*, and
this checked the bleeding for a time; but it shortly afterwards recurred, and
though the stump was ligatured again the child died. The blood showed no
tendency to coagulate. Dr. Tross maintains that this ligature of the whole
mass is the easiest and most effective method, and suggests that the ligature
should be renewed every three or four hours to prevent loosening from shrink-
ing of the tissues, and consequent recurrence of the hæmorrhage.

Post-Partum Hæmorrhage. — At the meeting at Freiburg of the
Deutsche Gesellsch. f. Gynæcologie, held in June of last year, Dührssen of Berlin,
makes the statement that statistics show that in Prussia alone at least one
woman dies every day of post-partum hæmorrhage. Dr. Dührssen maintained
that plugging of the uterine cavity and of the vagina together was the best
and surest method of treatment. In the discussion which followed, Olshausen
and others thought this method scarcely suitable for cases of hæmorrhage from
atony, though he had seen the plug set up uterine contraction. Dohrn had

seen in four cases immediate contraction result, especially in a case of Cæsarian section.

Obesity and Sterility.—The *New York Medical Journal* for November, 1889, quotes Dr. Philbert (*Revue Gen. de Clinique et de Therapeut.*), who found that obesity in either sex was frequently associated with sterility, and that favourable results were obtained by measures taken for the reduction of fat. " In the male, excessive *embonpoint* retards the development of the generative organs, producing atrophy in certain cases, while in others the conditions are similar to those which obtain in childhood. After adult age, polysarca notably diminishes sexual desire, which returns with the loss of the super-fluous flesh. In the female, amenorrhœa and dysmenorrhœa result from excess of fat. An accumulation across the abdomen exerts mechanical pressure that impedes utero-ovarian function. Possibly ovulation fails of accomplishment in consequence of defective nerve excitation. The requisite loss of flesh puts the organs into their normal state, rendering fecundation possible. Five cases are recorded of very stout women, married several years without offspring, who became mothers in consequence of treatment that did away with obesity. This treatment included a course of baths and mineral waters, such as those of Brides and Salins-Moutiers. Fertility ceased whenever the obesity returned. Some of the women gave birth to several children, the first usually arriving during the year following the beginning of the treatment." The treatment suggested would seem at least worth trying, but we think that, in a majority of such cases in women, the defective condition of the genitals will be found to be primary. Many women put on fat quickly at the time of the menopause, whether that be premature or not. The Egyptian eunuchs are, we believe, mostly very fat men.

On the Pathogenic Action of a Microbe found in the Urine in Cases of Puerperal Eclampsia.—Dr. Emile Blanc contributes an article on this subject to the March and April numbers of the *Archives de Tocologie*. So far back as 1883 and 1885 Doleris published the results of some investigations into the appearances and action on lower animals of a micro-organism found in the urine in certain cases of albuminuria, though further research seems to have led him to seek the exciting cause of albuminuric convulsions elsewhere. In 1887 Dr. Blanc failed to find any micro-organism in the blood from a case of eclampsia. He succeeded, however, in finding in the urine a bacillus which, after cultivation in sterilised infusions, produced convulsions when injected into a rabbit. The experiments, however, were abandoned till January of this year. The urine used in these experiments was obtained from a primipara, eight months pregnant, admitted to hospital suffering from eclampsia. Before any treatment was adopted, some urine was drawn off with the usual precautions, and a small quantity was kept in a tube of gelatine for future cultivations. On the surface of gelatine colonies soon formed of a bluish-white colour, and they did not liquify the gelatine. All these colonies were composed microscopically of one bacillus of small size, with very quick movements, darting right across the field. The microbes were of various sizes, but were on an average 2 micromillimetres long and half as wide. The ends were rounded ; a few were slightly bent to a comma shape. They were rapidly stained with aniline reagents, and showed in their centre a more deeply stained nucleus. The nucleus was always round, and sometimes projected slightly. After a time the nucleus becomes longer, and becomes constricted in its middle, and finally divides transversely. The bacilli thus are united like diplococci. In a few cases the nucleus was absent ; in these cases the bacillus seemed atrophied, and had no movement proper to itself. The form varied somewhat according to the cultivating medium, being larger in meat infusions and blood, with the nucleus nearer one end of the bacillus. On potato the cultivation forms yellowish deposit in little heaps in a circinate manner.

Books, Pamphlets, &c., Received.

Lectures on General Pathology, by Julius Cohnheim, translated from
the second German edition, by Alex. B. M'Kee, M.B.   Section
II : The Pathology of Nutrition.   London : The New Sydenham
Society.   1889.

A Text Book of Human Anatomy, including the Embryology,
Histology, and Morphology of Man, by Alex. Macalister, M.D.,
F.R.S.   With 816 Illustrations.   London : Charles Griffin &
Co.   1889.

The Treatment of Internal Derangements of the Knee-Joint by
Operation, by Herbert Wm. Allingham, F.R.C.S.   London :
J. & A. Churchill.   1889.

Clinical Lectures on the Diseases of Women, delivered in Saint
Bartholemew's Hospital, by J. Matthews Duncan, A.M., M.D.
Fourth Edition.   London : J. & A. Churchill.   1889.

Lehrbuch der Kinderkrankheiten, von Dr. Adolf Baginsky.   Dritte
Auflage.   Berlin : Friedrich Wreden.   1889.

Die Krankheiten der Frauen, von Dr. Heinrich Fritsch, mit 181
Abbildungen in Holzschuitt.   Berlin : Friedrich Wreden.   1889.

Lehrbuch der Physikalischen Untersuchungsmethoden innerer
Krankheiten, von Dr. Hermann Eichhorst.   Band I und II.
Dritte Auflage, mit 267 Abbildungen.   Berlin : Friedrich
Wreden.   1889.

The Geographical Distribution of some Tropical Diseases, and their
Relation to Physical Phenomena, by R. W. Felkin, M.D.,
F.R.S.E.   With sixteen maps.   Edinburgh and London :
Young J. Pentland.   1889.

Suppurative and Septic Diseases, by W. Watson Cheyne, M.B.
Edinburgh and London : Young J. Pentland.   1889.

Chronic Bronchitis, and its Treatment : a Clinical Study, by Wm.
Murrell, M.D.   London : H. K. Lewis.   1889.

A Manual of Nursing, Medical and Surgical, by Lawrence Humphry,
M.A., M.B.   With numerous Illustrations.   London : Chas.
Griffin & Co.   1889.

A Text Book of Mental Diseases, with Special Reference to the
Pathological Aspects of Insanity, by W. Bevan Lewis, L.R.C.P.
With Illustrations in the Text, Charts, and 18 Plates.   London :
Chas. Griffin & Co.   1889.

Insomnia and its Therapeutics, by A. W. Macfarlane, M.D.   London :
H. K. Lewis.   1890.

History and Pathology of Vaccination.   Vol. I : a Critical Inquiry,
by Edgar M. Crookshank, M.B.   London : H. K. Lewis.   1889.

Essay on Medical Pneumatology, by J. N. Demarquay, translated
by Samuel S. Wallian, A.M., M.D.   Philadelphia and London :
F. A. Davis.   1889.

A Treatise on Materia Medica, Pharmacology, and Therapeutics, by
John V. Shoemaker, M.D., and John Aulde, M.D.   In Two
Volumes.   Vol. I.   Philadelphia : F. A. Davis.   1889.

ORIGINAL ARTICLES.

SOME OBSCURE CAUSES OF SUDDEN DEATH REVEALED BY *POST-MORTEM* EXAMINATIONS IN MEDICO-LEGAL INVESTIGATIONS AND IN PRIVATE PRACTICE.

(*With Lithographic Illustration.*)

BY SAMUEL JOHNSTON MOORE, M.D., F.F.P.S.G.,

Medico-Legal Examiner for Glasgow and the Lower Ward of Lanarkshire ;
Formerly Pathologist to the Glasgow Royal Infirmary, &c.

CASES of sudden death frequently require investigation by the Crown authorities. Therefore a large number of such come under my observation. I mean sudden death, where symptoms had given no indication of the presence of disease to account for it, or, if such symptoms did exist, they had not been observed or did not call for medical advice. In my experience obscure aneurisms form a large percentage in producing such cases, therefore in this short paper I will confine my remarks to that cause.

It would be beyond the range of these notes to refer to the causation of aneurism, but I may state in passing, that in a very large experience I have not found syphilis to be the important factor in producing disease of the arterial system, which it is represented to be by many writers on the subject.

In the many idiopathic aneurisms occurring in my own private practice, or seen by me with others in consultation, I have only been able to trace a clear history of syphilitic origin

in two cases; and in medico-legal investigations, I have seldom obtained a definite history of the presence of the disease except where the dissection of the body revealed its ravages in some other form also.

Small aneurisms in the arterial system of the brain, chiefly of the pouched variety, are very common, especially in the middle cerebral artery and its branches, and they are the principal cause of cerebral hæmorrhage.   Of course such hæmorrhage does not in very many instances produce sudden death, but the rupture of one of those small sacs frequently proves fatal in a short period of time, on account of the particular portion of the brain or origin of nerves implicated by the extravasated blood.   It is difficult, and frequently impossible, in medico-legal investigations, to say how long a period has elapsed from the rupture till death, as the deceased are frequently found dead in bed or in other positions where they have not been under observation for a time.

ANEURISM OF A BRANCH OF THE BASILAR ARTERY.

This case is interesting on account of the artery which, in my experience, is less subject to aneurism than that of any other supply to the brain, and also on account of the short time that must have elapsed from the rupture till death.

J. M., a blacksmith, aged 45, married, and the father of a healthy family, was found dead at the foot of the stair leading to his lodgings. He was a healthy, temperate man, and his wife told me she had never known of his consulting a doctor, and she never heard him complain of illness, except sometimes of a cold in winter. He had about a mile to walk to and from his work, and about an hour after he should have arrived home a neighbour told his wife that her husband was in a half sitting posture at the foot of the stair, and that she could not rouse him. From the history it appeared as if he had fallen gently when beginning to ascend the stair, for the body was found in a reclining position, with the head leaning against the wall. I conducted a *post-mortem* examination of the body, which was that of a robust man, and no mark of violence could be detected on it. Blood was found extravas-ated into the left lobe of the cerebellum, and down under the membrane over the medulla, in considerable quantity. When the blood was carefully washed away, a small ruptured aneurism, not much more than twice the thickness of the artery of which it formed part, was discovered in a branch of the basilar artery. The heart and all the organs of the body

appeared to be in a healthy condition, except that some small atheromatous patches were observed on the arch of the aorta and in the small arteries on the base of the brain, one of which had evidently produced the small aneurism that caused death.

I might here refer to rupture, or partial dilatation, or what is termed aneurism of the heart; but as such, even at an early stage, generally gives indication of its presence by palpitation, breathlessness, &c., I shall not dwell upon it further than to state that I have several times met with sudden death from this diseased condition when there was no history of symptoms indicating its presence during life. Sufficient reference is made to this form of aneurism in notes to follow.

Aneurisms of the Aorta.

One of the most common forms of sudden death that has come under my notice is a small pouched aneurism at the origin of the aorta, behind a segment of the aortic valve, generally the posterior one, which bursts into the pericardium. Of course, if the pouch attains a considerable size before it bursts, it gives rise to symptoms that may or may not lead to the discovery of its presence during life ; but I refer to those that give no evidence of their presence till, by their rupture, they suddenly snap asunder the thread of life.

M. G., aged 19, a furniture polisher, of respectable parents, and a very handsome young woman, was found dead in bed when her mother went to call her to go to her work. She had gone to a theatre with her sweetheart the previous night, and was in excellent health. As no explanation of the cause of death could be given, I conducted an examination of the body by virtue of a warrant from the Sheriff. The body was that of a virgo intacta. It was very well developed, and her mother said she was a remarkably healthy girl, and one of seven of a very healthy family. Every organ of the body appeared to be in a healthy condition. The pericardium was distended with fluid and clotted blood, lying around the heart, which had been poured into it from the rupture of a small aneurism, not much larger than a large sized pea, situated behind the posterior segment of the aortic valve. No trace of degeneration could be detected in the aorta or in the valves of the heart. I have seen twenty-four such cases in medico-legal investigations, but in only six of these was there no diseased condition of the arteries, and this was the only one of the six where the person affected was so young. Of course there must have been some congenital weakness at the part.

My friend and colleague in medico-legal investigations for the city, Dr. James Dunlop, Professor of Surgery in Anderson's College, has kindly given me some of his experience of cases of sudden death from obscure aneurisms in the head, heart, and origin of the aorta in the following notes:—

"Regarding the cases of aneurismal dilatation of the heart with rupture, and effusion of blood into the pericardium, giving rise to sudden death, I have only notes of seven. Of the seven, one was in a female, six in males; three were in the right ventricle, and four in the left.

"The age of the female was 38 years; the others were above 45.

"In all the seven, so far as I could ascertain, death took place within two minutes.

"The causes of the dilatation were not the same in all the cases.

"In four, including that in the female, the dilatation was due to what seemed to me to be fatty degeneration of the muscular tissue of the ventricular wall.

"In one, in the left ventricle, there had been a small abscess in the wall of the heart which had burst into the interior of the ventricle, and the abscess cavity, instead of contracting, had become an aneurismal pouch which had become rapidly thinned and ruptured. I came to that conclusion from finding another small abscess, lower down, on the point of bursting, not into the ventricle, but into the pericardium. The disease appeared to have been of syphilitic origin.

"The second case was of traumatic origin by violence. Extravasation of blood had taken place into the walls of the heart—a clot had formed, and, becoming partially absorbed, left a small cavity or cyst. This point proved a weak part in the wall of the ventricle, dilatation took place, and finally rupture. There were evidences of extravasation of blood on the left side as well as on the right.

"Except in this latter case, where there was a distinct history of violence two weeks before the fatal result, there was no evidence that the aneurismal condition of the walls of the heart had been recognised during life.

"In the third case the note I have is not sufficiently detailed for useful purposes. There is only the word "gumma," with a note of interrogation after it.

"In all the cases it was noted that in the serous covering, the last to give way, the tear was considerable, fully half an inch, and gaping, and the fleshy columns in the interior had entirely disappeared. In none was there any evidence of laminated clot.

"Of ruptured aneurismal pouches in the ascending portion of the aorta, at or near the sinuses of valsalva, I have seen at least twenty cases, all rapidly fatal by hæmorrhage into the sac of the pericardium.

"Sudden death, without any premonitory symptoms, upon the street, in warehouses, or offices, or while sitting quietly at home, are often due to a ruptured pouch, the evidence of which had been unknown, and not to a ruptured vessel within the cranium. I have seen at least fifty cases of ruptured aneurismal pouches in the vessels composing the circle of Willis, and in the vessels connected with the lateral ventricles. I have not observed atheromatous pouches in the larger cerebral vessels, only in the smaller."

Aneurism of the thoracic aorta, except at the very origin of the vessel from the heart, generally gives indication of its presence, but there are many cases with symptoms so varied and unintelligible as to render a correct diagnosis very difficult; and there are some cases where no complaint has been made, and sudden death, without a known cause for it, calls for a *post-mortem* examination of the body. The following case is an example of the last mentioned variety.

R. W., aged 38, a cooper to trade, and who had not been known to complain of illness, quarrelled with a fellow work-man, with whom he fought several rounds. At length they got into close quarters, wrestled, and both fell together, and when R. W's. second tried to raise him he was found to be dead. His opponent was lodged in prison, and I was instructed to make an examination of the body. He and his antagonist were both powerful men, and the body of the deceased pre-sented several severe contusions. The cause of death was rupture of an aneurism of the aorta into the left pleural cavity. The tumour was over the eighth and ninth dorsal vertebræ, and had evidently not been of long duration, as there was no erosion of the bones. A laminated clot was pre-sent in the vessel, but the inner layers were not very firm. Several atheromatous patches were found in the aorta, and it was at one of these that a fusiform aneurism had formed, and the struggle was no doubt the cause of its rupture. He was a married man with four healthy children, and I learned from a brother of his that he was confident he never had venereal disease of any kind, as they were close companions, and knew each other's affairs from boyhood. I have met with four such cases in medico-legal work, in none of which was there any history of pain having been complained of. I don't refer to rupture of a diseased aorta from violence without any aneurism

being present. I have seen one such case where the vessel looked as if it had been severed by a sharp cutting instrument.

I shall now refer to a class of cases where some symptoms indicate the presence of aneurism, but not sufficiently clear to warrant a decided opinion by the most experienced physician. I select two from private practice, and one from hospital work.

J. G., a musician, and apparently a healthy man, of 37 years of age. He was a very clever athlete and a swift runner. He consulted his medical adviser about a pain in his back, which he said had come on suddenly after performing some feats on the cross-bar. His doctor told him that it was probably a sprain of muscles, but lest he might have injured the aorta he advised him to take rest for some weeks, and to ensure confinement to bed, and also to counter-irritate the part pained, he blistered it severely three times, and the patient was in all confined to bed and to the house for six weeks. He was then advised to undergo very little fatigue and to take no violent exercise of any kind for some time. These instructions were faithfully carried out, but he continued to complain of slight pain in his back at intervals. No other symptom of aneurism was discovered. One evening, about ten months after he had felt pain from exercising on the cross-bar, he was discoursing music at the piano to some friends, when he suddenly fell from the stool dead. His medical adviser had predeceased him by three weeks, and I was requested by his relatives to conduct an examination of his body. He was married and had four healthy children. His wife, who supplied me with these notes of the case, told me he was a very healthy, temperate man, and he was insured as a " first class " life a month before his death.

Autopsy.—The body was that of a man about 5 feet 10 inches in height, well developed and muscular. By request, the only part of the body examined was the chest, and the organs were examined *in situ.* The left pleural cavity contained a large quantity of clotted and fluid blood, which had escaped from a rupture in an aneurism of the aorta over the ninth and tenth dorsal vertebræ. The bodies of the vertebræ were slightly eroded, but the intercostal cartilages were intact. The tumour was pouched to the left side and thickly lined with laminated clot—the outer one being very firm except at the rupture. The aorta presented many patches of atheromatous deposit, which so weakened it as to render it unable to bear the strain of bending during violent exercise ; hence the origin of the aneurism which produced death. The heart and lungs appeared normal.

A curious case of this kind once came under my notice in hospital. A man, aged 43, was admitted to a medical ward, complaining of pain in the region of the lower dorsal vertebræ, so severe as to prevent him working. No definite conclusion could be arrived at as to the cause of the pain, though he was carefully examined by four eminent physicians. He was supposed to be scheming, and he was ultimately told he must leave next morning, but during the night he, unobserved, threw himself from a height and was killed by fracturing his skull. On *post-mortem* examination an aneurism, almost similar to the one last described, was found, but not ruptured. The bodies of two vertebræ were eroded. It now exists as a dried preparation, with the vertebræ attached, in the museum of the hospital.

The following case of aneurism, occurring in private practice, though it was not, strictly speaking, very obscure, is so peculiar and interesting that I will give it here in some detail. The congenital peculiarities discovered on dissection are also interesting, and, in my experience, not common.

A short history of the case, taken from notes kindly given me by a literary brother of the deceased, will show that a difference of opinion existed as to the nature of the case. Physicians of much experience will readily recognise the difficulty in forming a correct diagnosis of such a case. One of the greatest authorities on the subject (Dr. R. Douglas Powell, F.R.C.P.), says :—" The symptoms of thoracic aneurismal tumours frequently so closely resemble those of mediastinal tumours as to render the diagnosis between the two perplexing," and he might add occasionally impossible. I was sent for by the relatives to consult with the local attendant shortly before the patient died, but, being from home, I did not see him in life, and, as there was a doubt as to the cause of death, I was requested to conduct a *post-mortem* examination, which I did about forty hours after his decease. He was found dead in bed.

The body was that of a man, apparently between 30 and 40 years of age, of medium height. He was spare, but could not be said to be much emaciated. Rigor mortis was passing off, but no sign of decomposition was present. There was a slight prominence in the epigastric region.

*Dissection.—Head.—*The brain and its investing membranes were normal, except that the blood-vessels of the brain and its coverings seemed to contain less blood than usual.

*Chest.—*In order to get a continuous view of the thoracic and abdominal cavities, an incision was made from the pomum

Adami to the pubis, and the sternum, with the costal cartilages attached, removed. The apex of the heart was now observed to be pushed a little to the right side by a tumour lying behind it, and the left pleural cavity was literally filled by clotted and fluid blood lying over the lung, which was compressed by the extravasated blood.

Abdomen.—A tumour immediately below the diaphragm pressed against the upper curvature of the stomach, making the curve more acute than normal. A portion of the liver was slightly pushed forward in front of the tumour. All the contents of the thorax, except the lungs, were removed *en masse*, with a portion of the diaphragm and the tumour below the diaphragm, and placed in a jar of methylated spirit for future examination. On removing the tumour it was found that the bodies of the 10th, 11th, and 12th dorsal and 1st lumbar vertebræ were eroded, the intercostal cartilages standing intact between them. The lungs, the liver, the kidneys, with the supra-renal capsules, and all the organs not removed for dissection, appeared in a normal and healthy condition.

My friend, Mr. Maylard, kindly dissected the parts for me, and I annex his report, with a diagramatic sketch of the aneurism :—

" *Description of the Aneurism.*—The aneurism involves the lower part of the thoracic and the upper part of the abdominal aorta. It is constricted transversely by the diaphragm, giving it a somewhat hour-glass appearance. The part involving the thoracic aorta may be roughly represented in size by an orange, while that implicating the abdominal aorta by a pomegranate.

" Posteriorly the aneurism was eroded and hollowed out at the bodies of the 10th, 11th, and 12th dorsal and the 1st lumbar vertebræ.

" Laterally the two parts of the aneurism present somewhat different features. On the left side of the thoracic portion there is a marked conical-shaped projection into the pleural cavity. At the apex of the projection is an irregular shaped rent, admitting of free communication between the pleural cavity and the cavity of the aneurism. In the abdominal portion the large part of the aneurism is to the right of the middle line.

" Anteriorly the wall of the aorta can be traced the whole way down the aneurism. The cœliac axis comes off from the front part, and the superior mesenteric from immediately below the lowest limit of the aneurism.

" An examination of the contents of the sac shows it to consist, in the central part, of a quantity of recently clotted

T.A. Thoracic Aorta.
A.A. Abdominal Aorta
S.M.A. Superior Mesenteric Artery
D. Diaphragm
R. Rupture

T.A.

R.

D.   D.

S.M.A.

A.A.
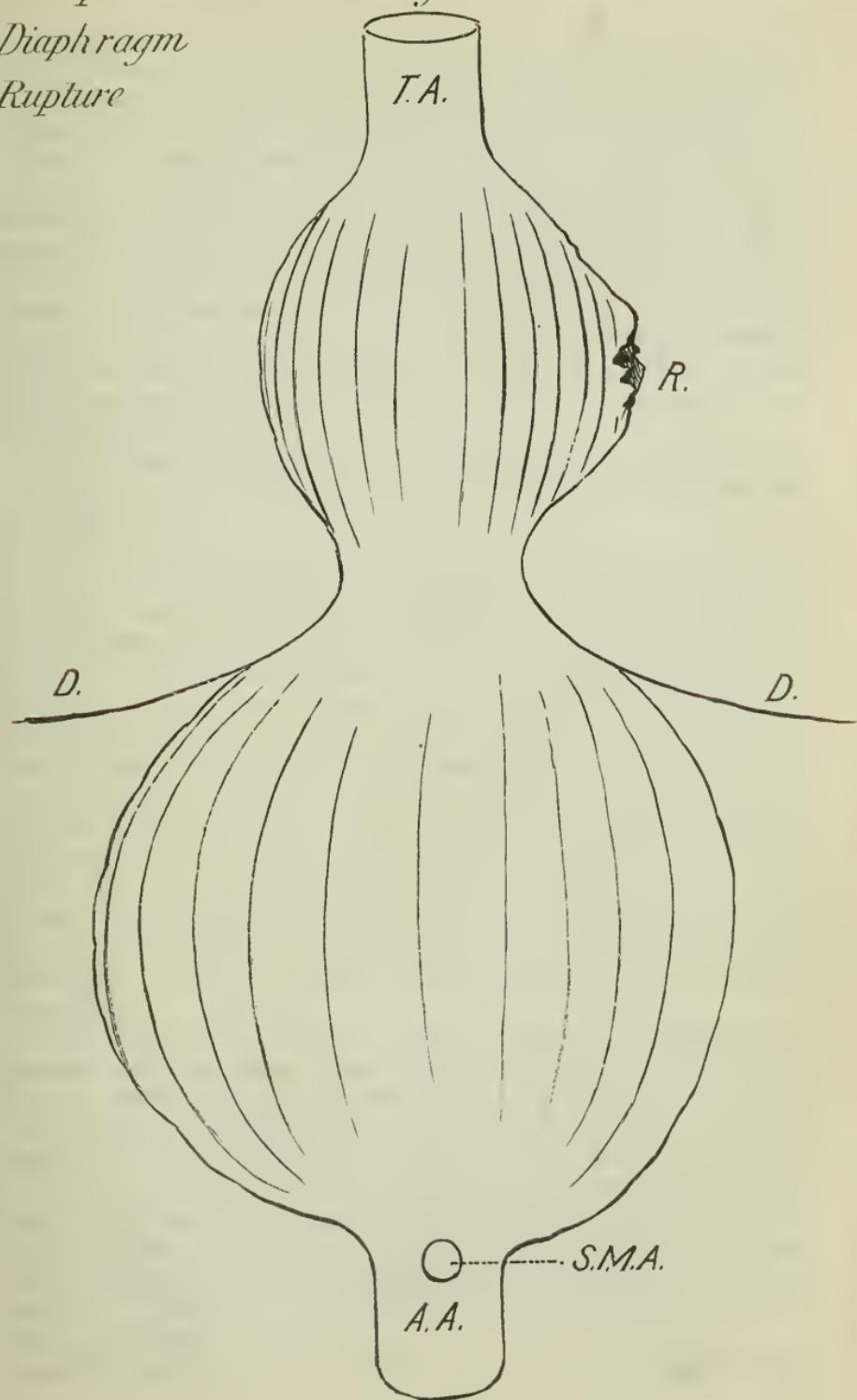
2/3 Natural Size.

blood, while at the periphery—and only posteriorly and later-ally—there are thick, dense layers of laminated clot. In front the corrugated, and in places almost sacculated, wall of the vessel is traceable from the unaffected aorta above to the same below. A closer examination of the aneurism shows that it commences abruptly and ends abruptly, the thoracic aorta entering it directly above, and the abdominal leaving it directly below. Further, it appears that the aneurism bulges somewhat downwards behind the unaffected part of the abdominal aorta. Where the aorta perforates the diaphragm, it is found that about five-sixths of the channel is maintained in its natural state; but the anterior one-sixth seems to have given, so that it is in this part that the two portions of the aneurism become directly continuous.

"At the seat of rupture in the thoracic portion there exists well marked laminated clot, only, at the rents the laminæ are seen incurved.

"*Examination of the Aorta from the Heart to the Aneu-rism.*—The aortic orifice possesses only two semilunar valves, slightly atheromatous, but apparently competent. They are placed one anterior, the other posterior; the latter is much the larger. There is no indication of an abortive third valve. The two coronary arteries are situated near the extremities of the anterior valve. In the ascending part of the arch the sinus is greatly bulged, very irregular, and with here and there small calcareous plates. The transverse part of the arch is also much bulged in the direction of the left carotid and left subclavian. At the lower part, just in front of the ductus arteriosus, there is what appears to be a sharp bend in the aorta, but it is impossible to straighten it, so that it is really a permanent fold of the coats of the vessel running transversely across the lower part of the artery and materially constricting its calibre.

"Just beyond the ductus arteriosus the aorta is again con-stricted, but here the whole channel is narrowed uniformly. The orifice is perfectly smooth, and apparently composed of normal tissue. It admits the apex of the little finger; a No. 14 urethral catheter might be taken as an approximate estimate of its size. Below this orifice, and in the descending part of the arch, the aorta becomes greatly dilated; and in front there is an aneurismal pouch large enough to admit of half a walnut. The remaining part of the thoracic aorta is greatly dilated and irregularly sacculated. In places are small plaques of cal-careous matter."

I take the following short history from the notes kindly

supplied by the deceased gentleman's brother. He first felt pain in his back when sitting at his desk in Manila about eighteen months before his death. He left for home in May or June 1886, and suffered much during the voyage, chiefly from pain in the back, which caused great restlessness. For at least a year before he left Manila he was in failing health, but was never absent from work, and he played lawn tennis regularly. After his arrival at home he continued to be unable to rest at night, seldom sleeping an hour at a time. He did not at first see a doctor, but eventually he consulted three most distinguished physicians in London, one of whom thought the pains arose from malaria. Another diagnosed aneurism, but hoped he might be incorrect, as the symptoms were not such as to enable him to give a definite opinion. He remained at work in his office in London till January, 1888, when, at his physician's suggestion, he went to Monte Carlo for the spring, and subsequently to Scotland, where he remained till his death, which occurred on the 31st May, 1889. During the last year of his life he slept better; his strength, however, steadily decreased, as was shown by the distance which he walked. During the autumn of 1888 he walked two or three miles daily, but during the last six months of his life he never went farther than the garden. After walking for a little he was in the habit of sitting on his heel, with his body bent forward, which seemed to give him relief. It will be seen, by referring to the dissection of the tumour, that such a position would tend to relieve the pressure from the eroded vertebræ for the time.

I am assured by a retired physician, who was on terms of close intimacy with the deceased gentleman, that he never had syphilis.

ON THE PATHOLOGY OF ACUTE AND CHRONIC BRONCHITIS AND BRONCHIAL ASTHMA.*

By A. G. AULD, M.D.

I. Normal Histology.

Owing to the difference of opinion which exists among histologists as to the precise structure of certain constituents of the mucous membrane of the human bronchus, and keeping

in view the fact that these same constituents are most importantly involved in all pathological conditions of the membrane, I have deemed it advisable, indeed I may say quite necessary, to discuss in this paper the normal anatomy of the bronchus, more particularly with reference to disputed points, and thus pave the way for the better appreciation of morbid processes.

The bronchial tubes anatomically considered, may be conveniently regarded in two great divisions. The first comprises all bronchi above half a line in diameter or thereabouts ; the latter, all those below this to the commencement of the alveolar ducts. Both sets are provided with an epithelium, an inner connective tissue layer, a circular muscular layer, and an outer fibrous tissue layer or adventitia, but to the first set alone pertain a compound (or stratified) epithelial layer, a well marked basement membrane, hyaline cartilages, and mucous glands. It will thus be seen that no organ of the body contains such a variety of structural elements as these larger sized bronchial tubes. Further, be it observed that the adventitia of this group is continuous with that of the accompanying blood-vessels, and the interlobular septa, whilst that of the smallest bronchi is continuous with, and passes insensibly into, the supporting structure of the alveolar walls. Not less significant is the difference in the source and mechanism of their blood supply. The former receive their blood from the bronchial arteries which accompany them, returning the same by the bronchial veins, which vessels, it may also be said, ramify in the inter-lobular connective tissue, ending as a capillary network underneath the pleura. The smaller bronchi are likewise supplied by the bronchial arteries, but in addition, and in a more important sense, by the pulmonary artery, and hence their capillaries anastomose with those of the adjacent alveoli.

Take now a medium sized bronchus. On examining a transverse section, the mucous membrane will be seen to have a somewhat sinuous outline, and its epithelial margin interrupted at intervals by the trumpet-shaped orifices of the ducts of the mucous glands, whilst lying above the epithelial cilia is a more or less fine coating of mucus. It is best and most convenient to examine the various structures from within outwards. Beginning, therefore, with the *epithelium*, it is easy to distinguish at least four different kinds of cells—a columnar ciliated cell, a goblet or chalice cell, a more or less spindle-shaped or ovoid cell, and a rounded or cuboidal cell lying underneath, all resting above a clear, apparently homogeneous basement

membrane, into which some of the rounded cells of Debove's layer sometimes appear to be slightly imbedded. With regard to the goblet cell, it is seen to taper to a narrow rounded extremity, and in this respect presents a striking contrast to its appearance generally in inflammatory conditions. It contains a nucleus which has become displaced downwards into a somewhat triangular area above its attached extremity. These goblet cells are exceedingly prominent in this situation in the cat, sometimes attaining a great size and almost perfectly globular, or even of greater breadth than length, in which case it is often difficult to demonstrate a nucleus. Owing to the difficulty in obtaining perfectly fresh specimens from the human subject, in order to study the ciliated columnar and the spindle cells, recourse must be had to the lower animals, and, of all the mammalia that I have examined, the rabbit is most suitable. Here the ciliated cells are seen to be of diverse shapes. When contiguous with a goblet cell it is sharply triangular, with a long pointed process, the ciliated margin representing its base ; and its nucleus, which is also more or less triangular, is often quite close to the free margin. The cell in fact has sunk from compression, at the expense of the intra-cellular substance, and the intra-cellular network being thus rendered closer, causes the cell body to stain more deeply than the fully extended columnar cell. The ciliated cells not so compressed, when traced downwards, usually exhibit two processes, as fork-like projections from each side of the cell body, directed towards the mucosa, the intervening space being occupied by a spheroidal basal cell. In some of these largest columnar cells I have observed two, and even three nuclei, one behind the other, a phenomenon which Valentin and Biermer have observed in the case of man. This seems to be especially the case in cells about to become goblet cells; and, while as yet the most external cilia are undetached in the process of transformation into the goblet cell, a pale rounded nucleus may sometimes be observed high up, apparently in the cell protoplasm, in addition to the more deeply stained nucleus at its base. Further, in some of the ciliated cells a large oblong nucleus may be perceived in the centre of the cell body, apparently undergoing division by karyomitosis. With regard to the wall of the columnar cell, in silvered preparations it has the appearance (and this when quite isolated from its surroundings) of a chain of granules, easily seen with a magnifying power of 700 diameters, a phenomenon which is not apparent in the cells of Debove's layer.

The basal layer of cells, already referred to, has quite the appearance of an endothelium in longitudinal sections, and was hence described by Debove* as a subepithelial endothelium. It is a single layer in the normal condition, though similar cells are invariably found here and there superimposed, and even existing for some distance up amongst the columnar cells. It has been considered by some—*e. g.*, Recklinghausen, Pagenstecher, Biesiadecki—that some of these cells are migratory lymph corpuscles; but this seems, in the normal condition at least, to be very doubtful.

Now, whilst there can be little question as to the characters and nature of the cells already referred to, it yet remains to be seen whether the same can be said respecting certain of the spindle-shaped or pyriform cells which are invariably found amongst the columnar cells. It is asserted by Klein,† in a somewhat emphatic manner, that there exist amongst the columnar cells true fixed connective tissue cells, and that these cells lie in spaces which form canals extending from the free surface of the epithelium downwards to the corium, where they communicate with the interfascicular lymph spaces, in which lie the connective tissue cells of the mucosa. And this eminent observer affirms that such cells (to which he has given the name of pseudo-stomatous cells) exist normally in all epithelia, and have a similar connection with the endothelial cells of serous membranes. Klein characterises these cells as being more or less branched, being drawn out into at least two processes, one directed towards the mucosa and the other towards the free surface, the appearance being quite different from that of mere intercellular cement substance. Further, they possess a small body, which is more opaque than that of the epithelial cell, and containing a small nucleus, which becomes more deeply stained by hæmatoxylin than the nucleus of an epithelial cell; and lastly, they are in connection with connective tissue corpuscles in the mucosa—all which " prove them to be inter-epithelial connective tissue cells." He further maintains that these cells and spaces form the only channel of communication betwixt the free surface and the mucosa, whereby fluid or formed material can pass either outwards or inwards. Hence Klein would have us believe that the epithelial layer is a compound structure containing a meso-blastic derivative, notwithstanding that epithelial cells in connection with connective tissue cells have been described

* *Comptes Rendus*, Dècembre, 1872.
† *Anatomy of the Lymphatic System*, vol ii, p. 26 ; see also his *Atlas of Histology.*

by Billroth, Heidenhain, Huxley, and others. This theory might, indeed, appear to receive some support from an experiment of Sikorsky's,* which consisted in introducing a watery solution of carminate of ammonium into the air passages of cats and dogs during life, when it was found that the ordinary columnar cells remained unstained, but that peculiar cells— on superficial aspect resembling columnar cells—took up the carmine readily, whence it had penetrated by vertical canals into the lymphatic system of the mucosa. Arnold,† also, by reversing the order of this experiment, found that indigo sulphate of sodium, injected at high pressure into the blood-vessels, passed through the lymphatics into the cement substance of the epithelial cells.

Now, in examining the tracheal epithelium of the rabbit, it will be found that there exist amongst the columnar cells at least three well marked varieties of ovoid cells. First, there will be observed (what is especially well marked in the cat) a pyriform cell, whose body is a little larger than one of the basal cells, and whose process is in connection with one of these latter cells ; secondly, a somewhat thin spindle-shaped cell, with a central globular nucleus, and having a long process directed downwards, and, it may be, one or two fine processes directed upwards ; and thirdly, a slender, somewhat columnar cell, bulging towards its base, and drawn out here into one, but more usually two processes, and having a minute process from each side of its free extremity, or without these latter processes, but presenting a fine striation of its blunted point, and containing in its bulging basal part a small, perfectly globular, deeply staining nucleus. By a Zeiss $\frac{1}{18}$th inch oil immersion lens, I have further occasionally detected minute branchlets from the thickest part of its body, which become lost in the cement substance of the adjacent cells. There can be no doubt whatever that this cell corresponds to the pseudo-stomatous cell described by Klein. But I must dissent from the view that it is a connective tissue cell. On the other hand, I believe it to be merely a *growing* columnar cell, of which those previously described were the antecedents, which in turn were derived by division of the deeper, or Debove's, layer of cells—in short, that these cells demonstrate the process of epithelial regeneration. In support of this statement, it may be pointed out that the striation and processes described as occasionally detected at the free surface of the most advanced of these, no doubt represent the commencing

* *Centralblatt f. Med. Wiss.*, 1870, No. 52.
† Virchow's *Archiv*, vol. 66.

formation of cilia; whilst, as regards the staining, I have yet to learn that the connective tissue corpuscle stains with hæmatoxylin more deeply than an epithelial cell. That this particular epithelial cell stains more deeply than those in its vicinity is due to the fact of its being an actively growing cell, and the same holds good with respect to the actively growing cells derived from connective tissue corpuscles.

In order still further to bring out the true nature of this cell, I tried the effect of silvering. First, I put pieces of fresh trachea into the silver solution, but found that while the superficial part of the epithelium was sufficiently stained, the silver had not thoroughly penetrated to the deeper layers. Silvering sections, previously frozen, is not attended with very satisfactory results. I accordingly employed the tracheæ of freshly killed rabbits and cats as follows:—After exposure, I placed a ligature tightly round the tube at its bifurcation, and then injected into it by the cut extremity, and whilst yet almost at blood heat, a quarter per cent solution of nitrate of silver, applying a graduated pressure, until, after the space of two or three minutes, I produced rupture of the tracheal wall. By this method I obtained some exceedingly beautiful sections. The silver had everywhere penetrated the cement substance, and had passed into the mucosa, just as the carmine in the experiment of Sikorsky. Now, if, as Klein asserts, inter-epithelial connective tissue cells and spaces exist, they could not fail to appear characteristically in specimens so treated. I obtained, however, wholly negative evidence of such spaces; not only so (and this in the very thinnest sections which could possibly be cut by the freezing microtome), but the peculiar cells referred to were outlined by the silver in precisely the same manner as the rest of the epithelial cells, and were indeed themselves, to a certain extent, stained, as contrasted with the clear intracellular substance of the ciliated columnar cells. I therefore conclude that the cells described by Klein as pseudo-stomatous connective tissue cells are in reality but growing epithelial cells, and that no such connective tissue media exist, or are required for the purpose of the absorption and transmission of substances to or from the mucosa.

The surface epithelium is continued for some distance along the ducts of the *mucous glands*, but the columnar cells soon lose their cilia, become more stunted, and ultimately give place rather abruptly to a single layer of spheroidal cells. The mucous glands are found in abundance in the mucous membrane and adventitia, extending between the cartilages. It is noticeable that they are relatively larger and more numerous

in the child than in the adult. In none of my sections of
mammalian bronchi, other than human, have I observed these
glands in the adventitia. But their absence in this situation
in animals seems to be made up for their great abundance in
the submucosa. In the cat, for instance, they may often
extend here as a continuous layer for more than a third of the
whole circumference of the tube, at least in the trachea. They
are also abundant in the sheep. With regard to the alveolar
cells, they are always found to vary in the same gland. Whilst
some are semi-transparent and columnar, others are granular
and spheroidal, according as they were actively secreting or
not before death. In the former case, the nucleus is always
displaced quite close up to the membrana propria, and has
generally a flattened appearance. If the cell, however, is
simply *enlarging* for the purpose of secreting, the nucleus is
some distance from the membrane and is spherical. And
just as in the columnar cells of the surface layer, so also in
the secreting gland cell, in this transitional stage, two or
more nuclei may be often seen, one behind the other. Yet
another cell has to be considered in the mucous glands ; these
are the crescents of Gianuzzi, which are by no means unfre-
quently observed in this situation. Without going at length
into the controversial views regarding these bodies, from what
occurs in inflammatory states, I am rather inclined to accept
the opinion of Heidenhain, Boll, and Lavdowski, that these
represent young germinal cells, and yet there is much to be
urged in favour of the view of Ewald, Ranvier, Ebner, and
others, as to these cells representing exhausted, shrunken,
secreting cells, the shrinking being mainly brought about by
the pressure of the swollen adjacent secreting cells, just as has
been pointed out in the case of many of the columnar ciliated
cells on the free surface of the mucosa. Lying in the centre
of the alveoli round cells are sometimes to be observed. The
basement membrane of the gland consists, according to
Schwalbe, Ebner, and others, of branched flattened cells, from
which fine filaments proceed into the cement substance betwixt
the gland cells. I find that this process, which is said to exist
in connection with the secreting cells of all glands, is exceed-
ingly marked in those of the intestine of the pig, being easily
seen there with a magnifying power of 700 diameters, and
here, indeed, would likewise appear to be some confirmation of
the statement of Watney,* that these processes may be accom-
panied by cellular bodies from the connective tissue beneath.

Pertaining to the epithelia, there yet remain to be con-

* *Philosophical Transactions*, 1876.

sidered the *mucous corpuscles*, which are to be found amongst the mucus coating the surface. Reference has been made to the presence of round cells amongst the surface epithelial cells, resembling those of Debove's layer, and naturally it might be presumed that these cells are passing out to appear as mucous corpuscles. That such is the case normally is, however, by no means clear. On the other hand, I have drawn attention to the occasional presence in the largest of the ciliated cells, and that apparently before they become converted into goblet cells, of several nuclei in a row, and although hitherto un- described, there is strong presumptive evidence that, at a cer- tain stage, the outermost of these nuclei acquire a cell body and pass out as mucous corpuscles. Indeed, Hamilton * has described a not dissimilar process in some of the transitional spindle-shaped cells. By division of the nucleus, the outer- most pointed part of the cell is cast off and discharged as a mucous corpuscle, the remaining portion continuing to grow. In the mucous glands, however, which furnish some of the mucous corpuscles, no such transitional cells occur, and the corpuscles derived from them must be held to be produced in the manner I have described.

Next to the epithelium comes the consideration of an interesting and important structure, which, in pathological conditions of the mucosa, has been the theme of considerable discussion—the *basement membrane*. In the trachea and main bronchi it is normally only about ·005‴ in diameter (Kölliker). It forms the outer boundary of the corium, with which it is inseparably united. Its thickness diminishes *pari passu* with that of the bronchi, becoming exceedingly attenuated in the smaller tubes, and quite imperceptible in their smallest ramifications. *This membrane occurs only in the human subject.* It is no doubt true that a faint resemblance to such exists in the bronchi of certain mammals, *e. g.*, pig, rabbit, but in these instances it is not a specialised structure, but simply an outer boundary of ordinary connective tissue, and it is observable that in these cases, in the bronchi namely of lower animals, the basal layer of cells presents a greater degree of coherency than is the case in man. Owing to its thinness and delicacy the basement membrane is but little fitted for examination in the normal state, but in inflammatory conditions it swells greatly from œdema, be- coming exceedingly prominent, and measuring nearly ·15‴ in diameter, and is then well fitted for examination in cer- tain respects. Care must be taken that the cut sections are

* *Pathology of Bronchitis*, pp. 20, 21.

perfectly perpendicular to the axis of the tube, else deceptive appearances result from parts of the membrane not being seen at the same level. Without any further treatment it appears under a high power to be perfectly homogeneous, with the exception of fine vertical canals which appear as whitish lines extending from the connective tissue beneath up to the epithelium. These are the lymph-canaliculi, first observed in this particular situation, I believe, by Rindfleish, and described by him in his *Pathological Anatomy* as *pores,* and since, much insisted on by Klein in connection with his so-called pseudo-stomatous cells. These canals are connected with a lymph space in the corium, in which a connective tissue corpuscle lies, and by a Zeiss oil-immersion lens I have observed in stained sections a fine streak extending from this cell through the canal up to the epithelium. It is stated by Schäfer, in Quain's *Anatomy*, that processes are also directed downwards from the epithelial cells. This is apparently given on the authority of Klein. I have never been able to obtain the very slightest evidence of such processes. On the other hand, the process mentioned by Schäfer must be held to refer to that already described, which passes into the epithelial cement substance, just as has been seen to exist in mucous and other glands. Further, these canaliculi are not all straight, some of them I have discovered to be branched, being more or less Y shaped. Now, as to the structure and homologies of this membrane, it is very commonly asserted to be a homogeneous, somewhat elastic layer. Further than this Kölliker * declines to go, but thinks it possible that it may belong genetically to the cells which it supports. Hamilton states most positively that it is absolutely homogeneous, and remains so after silvering; and, curiously enough, he seems to have even overlooked altogether the canaliculi referred to, as he remarks that "there are no interspaces visible in it." † Klein advances the proposition, which he (I believe by mistake) attributes to Debove, that it is in reality an endothelial membrane—"the subepithelial endothelium of Debove," which description, as has been mentioned, was applied by Debove to the basal layer of epithelial cells. Klein further states that that portion of the basement membrane lining the trachea is a homogeneous, non-nucleated, elastic layer, while that lining the bronchi is an endothelium. This is utterly erroneous. The membrane has precisely the same structure throughout. It is quite true that little or nothing can be made of it by silvering or by the gold method. All my efforts in this respect ended in failure,

* *Microscop. Anat.*, p. 59.   † Ibid, p. 36.

owing, no doubt, to the difficulty in obtaining fresh sections, for which alone, in fact, silvering is of any use. Maceration in $\frac{1}{10}$th per cent solution of common salt, as recommended by Schweigger-Seidel, also gives unsatisfactory results. I find, however, that by prolonged immersion in an *alcoholic* solution of picric acid, this so-called homogeneous membrane is in reality composed of excessively fine longitudinally disposed fibrils. And if, previous to maceration, the sections be stained in Bismarck brown, there will occasionally be observed small fusiform nuclei and granules imbedded in it, more especially in the young subject (mount in Farrant's solution). There can thus be little doubt that this is a connective tissue structure of a special kind, being intermediate betwixt ordinary connective tissue and elastic tissue, but more nearly allied to the latter. That it is not endothelial in character is proved by the disposition of its fibres, and by its elastic properties, resisting, as it does, the action of strong acetic acid and prolonged maceration in liquor potassii. As to its homologies, it is probably to be classed with the anterior elastic lamina of the cornea, which is structurally much the same (Kölliker, indeed, having stated that he has detected nuclei in it), and which likewise is only to be well seen in the human subject. The capsule of the lens, the membrane of Reissner, and the hyaloid membrane appear also to correspond to this structure, and probably also the subendothelial layer described by Bizzozero * and Salvioli occurring under serous membranes, which, however, in my limited observations of the same, seems to have more of a fænestrated character than these structures. Stirling † has drawn attention to a probably homologous structure in the stomach of the cat, existing as a clear line above the muscularis, and beneath a thin subepithelial connective tissue layer, occupying, in fact, a position somewhat analogous to that of Henle's elastic lamina in arteries. I find that this layer in the cat's stomach (which does not exist in the human subject) is likewise resolvable into fibrils, but it is penetrated by numerous cells and fibres, and in this respect, but in this respect only, differs from the bronchial basement membrane. It seems improbable, however, as some have asserted, that Descemet's membrane pertains to this division, being more of a true elastic tissue, and staining yellow with picrocarmine, whilst these other structures stain a deep red. Nor can the basement membrane of glandular elements, such as that in the intestinal tract, be classed in this group, being probably

* *Centralblatt f. Med. Weis.*, 1874, No. 14.
† *Atlas of Histology.*

cellular in origin, and more akin to the membrana reticularis, and the tectorial membrane.   Authors, indeed, usually describe the membranæ propriæ of the ducts of the mucous glands as a continuation of the bronchial basement membrane, just as in the intestine, the basement membrane is continuous with, and structurally identical with, that of the crypts of Lieberkühn. It is no doubt true that the bronchial basement membrane passes insensibly into the membrana propria of the gland duct, but it soon disappears, giving place to the true membrana propria, which may be advantageously studied in certain animals — *e. g.*, the sheep, wherein no trace of a bronchial basement membrane exists.

The *inner connective tissue layer* consists, first of all, of an inner reticulated, highly vascular strand, immediately subjacent to the basement membrane.   Inside of this are numerous elastic fibres, very pronounced in some animals—*e. g.*, the pig. More especially in young subjects, and in animals, strands of connective tissue proper may be seen passing at intervals through the elastic layer and becoming continuous with bundles of wavy fibrous tissue beneath.   Outside the inner fibrous coat is an annular layer of unstriped muscular fibres, which is a prominent feature of even the smallest bronchi. In the trachea the special disposition of the elastic and muscular tissues must be noted.

The *cartilages* extend through all bronchi which contain mucous glands.   It is noticeable that, whilst the cells in the perichondrium are flattened and lie parallel to the surface of the cartilages, the oval cells of the interior lie across the long axis.   Also, the perichondrium is seen to be continuous with the connective tissue of the submucosa, which latter tissue passes between the free ends of the cartilages to join the adventitia, which consists of bundles of white fibrous tissue, mingled with a certain proportion of elastic tissue, the latter being especially prominent in the smaller bronchi.

The *lymphatics* of the bronchi are numerous and important. According to Klein they take origin in the mucosa as a network of fine capillaries, and are connected with larger vessels with valves situated in the submucosa and adventitia. In this latter situation they form a network, the individual vessels having for the most part a course parallel to the long axis of the bronchus.   These peribronchial lymphatics are most numerous in that part of the adventitia next to the branch of the pulmonary artery, anastomosing there with the perivascular lymphatics, which latter also anastomose with those of the alveolar septa, and ultimately, as in the

case of the vessels, form a copious plexus in the deeper layer of the pleura. Klein further states, what on careful examination may be verified, that in the mucosa proper the lymphatic arrangement is more that of a lymph-canalicular system, consisting of lacunæ and anastomosing canals containing branching corpuscles; whereas, in the adventitia the arrangement is that of elongated or rhombic spaces, connected by short canals, and these lacunæ are lined with corpuscles resembling an endothelium, being unbranched. In any case, the corpuscles, be they branched or unbranched, are continuous with the endothelium lining the lymphatic vessel in their vicinity. In young subjects particularly, the corpuscles lining the bundles may be occasionally observed to contain two nuclei. Besides these fixed corpuscles, whose nuclei appear spindle-shaped when seen on edge, there may be seen in the mucosa occasional large granular unbranched cells, containing a relatively large nucleus, which contains in its interior granules which stain deeply with nuclear staining reagents—the plasma cells of Waldeyer. The origin, functions, and behaviour in disease of these cells are as yet unknown.

In connection with the bronchial lymphatics are numerous *lymphadenoid bodies.* They are most usually observed in the medium sized bronchi, and are situated in the walls of lymphatic vessels, both in the mucosa and adventitia. They are frequently found near the ducts of mucous glands, which they may even envelop. They consist of a delicate, fibrillated reticulum, supporting capillaries, and more or less crowded with lymph corpuscles. My observations of these bodies in man would lead me to conclude that they are less cellular than the corresponding structures in the cat and guinea-pig; whilst, on the other hand, they are more cellular, containing less reticulum than those in the rabbit. Burdon Sanderson observes that in the adventitia they usually occupy a position near the artery. In morbid processes they are often useful as indicators of lymphatic vessels.

The *nerves* of the bronchi have not been satisfactorily traced. They are derived from the pneumogastric and the sympathetic system. Large pyriform nucleated gangliæ, and large branches containing medullated and non-medullated fibres, are to be seen in the adventitia, accompanied by one or more small branches of the bronchial artery. Stirling * has discovered a large number of gangliæ in the course of the nerves lying outside the posterior muscular wall of the trachea.

* *Histology*, p. 59.

(*To be continued*).

ON CONGENITAL DISLOCATION OF THE HIPS.*

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HAVING had under my observation, for some years past, a case
of congenital dislocation of both hip-joints, I have thought it
well to give the particulars in full, especially as it has certain
peculiar features, such as do not appear to have distinguished
any similar case hitherto recorded, and to add certain reflec-
tions which have become uppermost in my mind from the
study of the case.

The patient, when nine years of age, was placed under my
care by the late Miss Fletcher, in consequence of her having
the middle and ring fingers of the right hand closely united
(webbed). Her elder sister had the same condition in both
hands, and was operated on at the same time. On inquiry,
we found that a cousin had the second and third toes of one
foot similarly united, but no other abnormalities could be
traced in either the maternal or paternal families. The fingers
were successfully treated by Dieffenbach's method, which is, in
my opinion, by far the most satisfactory plan of dealing with
such deformities.

Her mother states that when patient was born it was said
to be a " cross birth," but our inquiries have failed to ascertain
whether or not this is to be understood as a breech presenta-
tion. When fourteen months old, the nurse was carrying the
child on her shoulder when the latter overbalanced, and would
have fallen, but that the nurse caught her by the feet and
saved her ; this, the mother says, gave the child a wrench.
She was very late in beginning to walk, and very slow in
learning ; she always walked with a rolling gait or waddle,
and easily became tired. When six years old she was placed
under the care of one of my colleagues at the Royal Infirmary,
who (resting his diagnosis probably on the lordosis, which had
by this time become pronounced) diagnosed the case as one of
spinal curvature, and accordingly treated it by the application
of a poroplastic jacket. As this was irksome to the child, and
did not improve matters at all, it was discarded after being
worn for a month. When she was in my wards during the
time the fingers were under treatment, nothing was said about

* Read before the Glasgow Medico-Chirurgical Society, 13th December,
1889.

the back or hips, but some months after being dismissed her
mother consulted me about her back. The time was not
favourable for a thorough investigation, as she came just at
the end of my hospital visit, but in the brief examination then
made, I was satisfied that there was no disease of the spine,
but said the hip-joints might be diseased, and suggested that
she should return for further and more careful examination.
It must, however, be admitted that I failed to recognise the
real nature of the affection, and, indeed, made no definite
diagnosis at all at that time. Three years ago she returned,
and I requested that she should be put to bed, so that I might
make a complete examination ; and no sooner had I placed my
thumbs on the anterior superior spines of the ilia, and my
fingers upon the greater trochanters, than the true state of
matters flashed through my mind so clearly as to render
further doubt impossible. Again, she passed out of my sight,
but being under the care of Dr. M'Knight Wilson, it is possible
to trace her further progress up to the present time. From
his account it appears that about six months ago she com-
plained of acute pain in the sole of the left foot, and of pain
over the sacrum and over the spines of the lower dorsal
vertebræ. She also had pain on pressure in the left groin,
and there was fulness and dull percussion above Poupart's
ligament on that side ; the thigh was semi-flexed on the
abdomen, and the leg was swollen and œdematous. After this
the leg became drawn up, and was not used in consequence of
the pain when attempts were made to put it to the ground ; it
was kept constantly swathed in bandages, and dressed with
oxide of zinc powder and lint.

Patient's mother brought her to me about five weeks ago to
see if I would amputate the left leg, as she said it was no use
to the girl. This was not to be decided without full investi-
gation, and I therefore took her into the wards of the
Infirmary. The whole limb, when the bandages were removed,
had a mummified appearance, and the skin was coated by
thick layers of epidermis mixed with zinc oxide. Both the
sensation and motion were much impaired. By a sort of
shampooing, carefully performed by the nurse, the limb was
restored to something like its normal aspect, and we were able
to make a thorough examination.

Present Condition.—When standing there is extreme lumbar
lordosis, and the gluteal prominence is on both sides very
marked. The trochanter major is far above the level of
the anterior superior spine, and is near to the crest of

the ilium. In consequence of her being unable to use the left leg, there is not noticeable that visible rolling of the trochanter which is so generally a characteristic sign in such cases. When lying down the tip of the trochanter comes to a lower level, but is still about $1\frac{1}{2}$ inches above Nelaton's line; but when firm traction is made on the leg, it can be brought down to that line. The total displacement of the trochanter, between the position it occupies in standing and that to which it can be brought by traction when she is recumbent, is not less than 4 inches. The limb is not rotated outwards or inwards when lying, and the motions are all normal in direction and range, excepting abduction, which is about half the normal range. On rotating the limb it appears to move on the axis of the shaft of the femur, and not on the axial line passing through the head, in this respect resembling a case of fracture of the neck of the femur. In any free movement of the limb a grating feel is produced, comparable to that found in the movement of old rheumatic joints. The head of the femur appears, however, to move over a dorsum of the ilium, which has no acetabulum, for it is not felt to enter any depression or to pass over any ridge. When the leg is pushed up, rotated outwards as far as possible, and adducted, the globular head of the bone can be quite easily made out on the dorsum of the ilium. There is tenderness on percussion over the spinous process of the last dorsal vertebra, and greater tenderness on pressure or percussion over the lower part of the sacrum, both in the middle line and laterally. The left leg is evidently smaller than the other, and even a casual examination suffices to show that it is not the muscles only which have suffered, but that the bone has been arrested in its growth. The tibia of the right leg is found to measure $14\frac{3}{4}$ inches in length, that of the left 14 inches, and there is a corresponding difference in the girth of the two bones. The right foot, near its middle, measures $7\frac{1}{2}$ inches in girth, the left $6\frac{1}{2}$ inches, the right calf $11\frac{1}{2}$ inches, the left 9 inches. The patella tendon and plantar reflexes are exaggerated in left, while in right they are perhaps a little subnormal. The cutaneous sensibility is below the normal in both legs, certainly not more so in the left than right. The muscles of both legs respond very feebly to the continuous current, while their response to the Faradic current, although better, scarcely reaches the normal. It was a surprise to us to find that the right leg, so much better nourished, muscular, and functionally useful, should yield no better electrical results than the atrophic left one; and it was apparent that the nerve affec-

tion, however caused, was not unilateral, as we at first supposed, but bilateral. Under the use of systematic massage the left leg has materially improved in its nutritional condition, and she can now freely move it in any direction. The power is, however, small; and although she can put it to the ground, she cannot put any weight on it, but uses it (if at all) for the purpose of steadying herself, and in no degree for support. When pressure is put on the foot, in such a manner as to stretch the posterior tibial nerve, she has deeply seated acute pain in the centre of the sole; but there is no evidence of neuritis in the course of the nerve.

Remarks.—Mr. Broadhurst, in his article on the subject of congenital dislocations, in Holme's *System of Surgery*, especially dwells on traumatism as the cause in nearly all instances. He considers nearly all cases to be the result of the attempts of the accoucheur to pull down the thighs at birth, in a breech presentation. Now, in the case before us, we have two traumatic possibilities: (1) we have the history of an irregular birth, though whether this means a breech presentation it is impossible now to say, and (2) we have the account of the child slipping from the nurse's shoulder and being caught by the foot. Unfortunately, neither of these causes is sufficient to account for the bilateral nature of the affection, nor for the total absence of acetabulum. All experience goes to prove that when the head of the femur is dislocated from a properly formed acetabulum, it becomes fixed at the spot whither it is displaced, and has formed around it a new cavity, and often a distinct capsule; that this should occur in adult age, or in young children suffering from hip-joint disease, and yet should not take place when the dislocation occurs at the time of birth, seems incredible. To my mind it is to a developmental defect that we must look for an explanation, and it is curious in this relation, that both this girl and her elder sisters should have been born with webbed-fingers, and that there should be a history of other congenital defects in the family. As to the nature of the defect causing dislocation of the hips, it plainly may be due to non-development of the epiphysis of the head of the femur, or to the non-formation of the acetabular cavity. In the case under review, the head of the bone can be felt, and is distinctly normal in size and shape, while there is equally incontestible evidence that there is no acetabulum present. In favour of the defect being due to early arrest of development, the existence of webbed fingers is of primary importance. The narrow slits which form the rudiments of the joint cavities

first show themselves about the seventh or eighth week of
embryonic life, although these cavities are not completed till the
fourth month, and it is remarkable that the clefts between the
fingers also first make their appearance during the seventh or
eighth week. It is clear, then, that if we assume a develop-
mental defect as existing here, the same cause may have
operated in the production of both conditions, since they
evidently took place at the same period of the individual's
history. In what manner this defect was brought about, it is,
in our present state of knowledge of congenital deformities,
impossible to determine.

It is probable that in the recorded cases of congenital dis-
location (especially those of which the statistics are given
by Pravaz), a considerable number of truly traumatic cases
are included, the condition being one of ordinary traumatic
dislocation occurring in a young child, and having nothing
" congenital " about it. Our suspicion is strengthened by the
fact that Pravaz suggests measures of treatment intended
" to maintain the head of the bone in its *socket*," whereas,
taking our case as an undoubted congenital one, we see that
there is reason to suspect the total absence of a socket. If
this surmise be correct, it gives some clue to the curious
statement made by that author that unilateral dislocation
is distinctly more common than bilateral; which statement
is directly at variance with the experience of Broadhurst, who
reports having seen 36 cases, of which 29 were bilateral and
only 7 unilateral. In fairness to Pravaz, it should, however,
be stated that his statistics are fully borne out by those
collected by Drachmann and Krönlein. All authors agree in
speaking of the condition as rare in males, but not uncommon
in females.

My search into the literature of the subject has not resulted
in finding any instance of the occurrence of paralysis or atrophy
of the legs in cases of this nature. Are we then to regard
these conditions in this patient as arising from some cause
independent of the congenital dislocations, and to consider their
association purely accidental ? I can scarcely think so. When
the patient was shown at the meeting of the Medico-Chirurgical
Society, it was objected, that if there was any real connection
between the two conditions, the nerve disturbance would not
be limited to one leg. Now, it will be noted above that
investigation by means of testing with the continuous and
Faradic currents showed that the right leg was also affected,
and was, both as regards sensation and muscular response, as
bad as the other. This argument may, therefore, be at once

dismissed. We must not forget that the lordosis was always so extreme that stretching of the nerves must of necessity take place, and would be evidenced by pain at the exit of the nerves from the sacral foramina, and at the point of their origin from the spinal cord, these being the parts of the nerves most fixed. The record shows that it was exactly at these two parts that pain was complained of. The condition of the left leg in many respects suggested infantile paralysis, but this view was not consistent with the period of its onset, the course it took, or the exaggeration of the patellar reflex. Looking at the matter in all its aspects, I am satisfied that there is a causal connection between the congenital dislocation and the arrested growth and partial atrophy of the left leg.

Treatment.—The treatment of this condition is always most unsatisfactory, and after a lapse of so many years, as in this case, can be (at best) only palliative. Dupuytren deals very trenchantly with the question of long continued extension when he asks—" Of what possible utility can it be to practise extension of the lower extremities, even supposing the limbs could thus be brought to their natural length ? Is it not evident that the head of the femur, finding no cavity fitted to receive and hold it, would, when abandoned to itself, resume its former abnormal position?" He adds—"There is something more rational and feasible in adopting a palliative course of treatment." In the hands of Humbert, Jacquier, Duval, Guérin, and others extension has, however, been attended by consider- able success, and they claim to have permanently secured the fixation of the head of the femur in something like its normal position. Guérin, indeed, does not trust to extension alone, but practises subcutaneous scarifications of the bone, ligaments, and even of the muscles, so as to set up inflammatory action and cause adhesions. These methods have never been attended by success when the patient was over the age of puberty, and have been most successful in children of from five to ten years of age. The palliative treatment consists in the wearing of a leather belt to bind down the trochanters, and keep them from sliding upwards on the dorsum of the ilium in standing or walking. It is fortunate that, with full development of the pelvis at the time of puberty, the walk becomes less difficult and the deformity less marked, although it always has much of the duck-like waddle.

AN INFLAMMATORY LESION IN THE KIDNEYS OF A RAM, WITH STREPTOCOCCI IN THE GLOMERULI AND TUBULES.*

(*With Illustrations.*)

By JOSEPH COATS, M.D.

The kidneys were sent to me by Dr. Fraser, of Paisley, the animal having died at his farm near Largs. It appears that the ram was affected with a condition which is not infrequent in male sheep and is recognised under the name of "stoppage of water." From this name it is evident that suppression or retention of urine is the most prominent symptom. The shepherd who has charge of the farm says that he has frequently seen it in male sheep, but never in females. He quite distinguishes it from calculus, and he says that it is always fatal.

The appearances presented were so striking that, although the history and even the examination of the body were very incomplete, I thought it worth while to record what I found. I shall be glad to have a further opportunity of examining the parts from similar cases.

To the naked eye, the kidneys presented somewhat numerous localised areas, partly hæmorrhagic, but generally presenting an irregular broken appearance, sometimes in the form of distinct, but minute abscess cavities. These were confined to the cortex, and presented generally somewhat of a wedge shape, but the apex of the wedge was sometimes considerably elongated.

Microscopic sections were made in the fresh state by freezing. When these were examined without further preparation, the glomeruli and tubules in the affected areas were seen to be largely occupied by a granular matter, which presented the clouded appearance of colonies of microbes. The condition was better displayed by staining, especially by Gram's method, with or without a counterstaining with alum-carmine. Sections were also made after hardening in alcohol, and these also showed the characteristic appearances when stained as above.

The microbes, which are stained of a deep blue colour, are obviously streptococci, being individually globular in shape, but almost always visibly arranged in rows, sometimes only

* Shown in the Glasgow Pathological and Clinical Society, on 13th January, 1890.

two, but more frequently long chains, curved and intertwining (see figure 1). The chains in some cases looked almost like beaded rods, but were always resolvable by high powers into cocci. The distribution of the microbes is essentially in Bowman's capsules and the connected convoluted tubules.
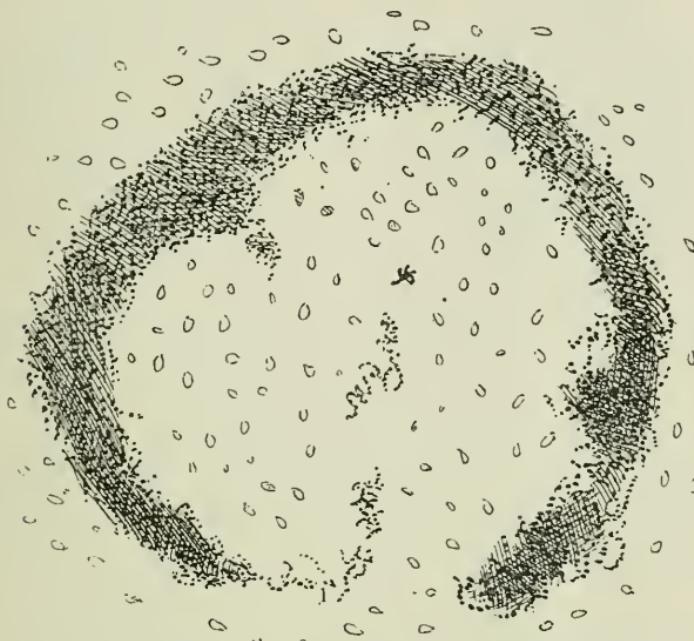
Fig. 1.—Glomerulus containing streptococci, chiefly at the periphery inside the capsule, but partly extending inwards between the lobules of the tuft.

In the capsules they lie outside the vessels, so that in a stained specimen the loop of vessel was frequently demarcated as a clear, colourless, or brownish area, the blue-stained microbes forming, as it were, a mould of the tuft, and partly extending between its lobules (see figure 2). This was most obvious in specimens without counterstaining, while in those which were counterstained with carmine, the nuclei of the vessels was visible in the lobules of the tuft. These double stained sections also showed that in many cases the capsule contained not only these microbes, but also large numbers of round cells; the latter were sometimes outside the microbes, so that there was first a blue zone of cocci clothing the tuft, and then a mantle of round cells distending the capsule.

The microbes in the capsules not infrequently were seen as if overflowing into the tubules, so that the glomerulus appeared as a blue coloured globe with a thick stem (see

figure 3), otherwise the convoluted tubules were frequently distended with cocci, and were visible in stained sections as thick worm-like bodies. In these tubules the epithelium was commonly indicated by clear spaces, so that a kind of honey-
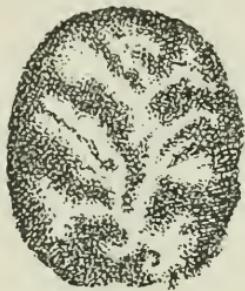
Fig. 2.—A glomerulus with the vessels partly mapped out as being free of microbes. (Low power.)
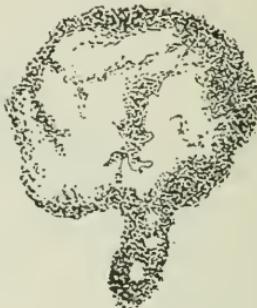
Fig. 3.—Glomerulus with microbes overflowing into tubule, so that the latter appears as a thick stem. In the tubule the clear spores represent epithelial cells.

combed appearance was visible (see figures 3 and 4). In double stained sections the nucleus of the epithelium was sometimes visible, but generally invisible, the epithelium having become necrosed.
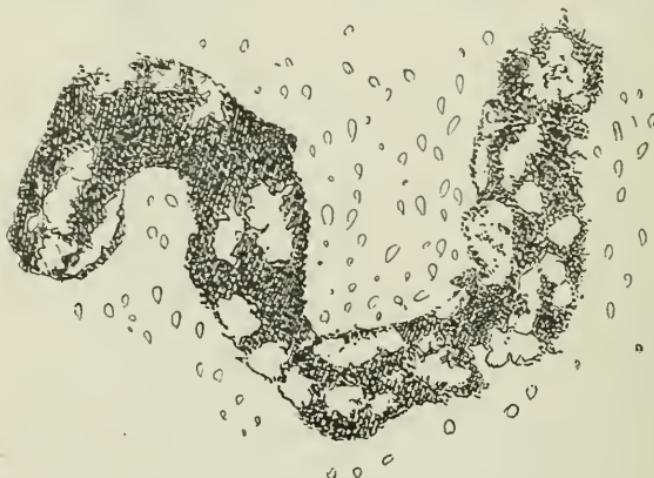
Fig. 4.—A tubule containing microbes. A honey-combed appearance is given from the epithelial cells being free from microbes.

In the areas affected, abundant round cells are present, and these have sometimes a special relation to the affected glomeruli and tubules, so that there are cells not only within the capsules but outside them, and there are also occasionally

groups of round cells outside the tubules corresponding with the colonies of microbes inside. There is also great distension of the capillary vessels in the affected areas.

The capsules had been stripped from the kidneys before they were received, but there were indications suggesting that the microbes may have extended into the lymphatics, especially the sub-capsular ones.

The appearances described above indicate an infection of the kidney with micrococci, and also show that the glomeruli form the local centres of the infection. The distribution of the lesion over both kidneys indicates that the infection was brought by the blood, and this is further confirmed by the fact that the lesions are confined to the cortex, and, indeed, are mainly in the superficial parts of the cortex. There is, therefore, no question of extension up the tubules from the pelvis, the tubules of the pyramids being free from lesion, which is confined to the wide convoluted tubules, that is to say, to those in immediate connection with the glomeruli. The microbes have not, however, as is customary in the case of pyæmia and ulcerative endocarditis, propagated inside the vessels of the tuft, but have, in the first place, escaped into the capsule and on into the tubules, where they have multiplied. In these comparatively free spaces they have taken on their characteristic mode of growth in chains.

The penetration of the vessels of the tuft by these fine microbes, which must be inferred, is a striking phenomenon; but when we consider how frequently red blood corpuscles make a similar transit, such a passage cannot be regarded as improbable. I am reminded in this connection of a similar passage of the tubercular bacillus, evidences of which I observed in the lungs in a case of general tuberculosis. In this case the tubercular bacillus had passed from the vessels into the alveoli, where it had multiplied to such an extraordinary extent as to present, in stained sections, the appearance sometimes of a red injection of the alveoli. The tubercular bacillus has probably little or no power of multiplication in the circulating blood, and in general tuberculosis (where it is present in the blood) it evidently passes from the vessels in multitudinous situations and propagates outside them, the extent of such propagation depending largely on the locality. It is very great in the lungs, as shown in the case mentioned above; it is very slight in the liver, although the deposition of individual bacilli is abundant in the liver. In the condition under consideration a somewhat similar relation seems to exist.

The microbes have not, apparently, propagated to any considerable extent inside the vessels, but having been extruded, they have multiplied very abundantly. I am not aware whether this has occurred in any other organs besides the kidneys, but from the symptoms during life it would appear that these organs have been, at least, specially affected.

P.S.—Dr. Newman has suggested that the propagation of the microbes may have been, in this case, by the lymphatics. He has referred (see report of the Medico-Chirurgical Society of 10th January) to the injections by himself and Dr. Lindsay Steven, from which it appeared that the lymphatics of the kidney are in communication with those of the capsule, and through these with those around the ureter and bladder. By forcibly injecting the ureter with Prussian blue, the injection material may be forced out into the connective tissue around the ureter, and travel onwards to the capsule of the kidney, and thence into the kidney substance. In like manner a septic infection may travel, and may lead to abscesses in the kidney itself, sometimes partly involving the capsule. I fully admit that this mode of infection occurs, having seen subcapsular abscesses which to my mind originated in this way. I am not prepared altogether to deny this mode of propagation in the present case, but I see several serious objections to it. The microbes are essentially in the glomeruli and tubules, and I cannot understand how they should get there from the lymphatics. There are frequently, as in figure 2, isolated glomeruli, obviously without any affected lymphatics around. Again, as both kidneys were involved, it is unlikely that this mode of extension would occur on both sides. If it is by the lymphatics, we have to explain how the microbes have, in the kidney tissue, propagated so abundantly in the capsules and tubules and not in the lymphatics themselves. There are difficulties in every direction, which will scarcely be solved till a complete *post-mortem* examination is made and the case fully investigated.

THE BACILLUS OF TETANUS.*

By ROBERT M. BUCHANAN, M.B., C.M.

GENTLEMEN,—The discovery of the microbe of tetanus forms one of the most interesting chapters in the literature of bacteriology. It has thrown a flood of light upon the origin and course of this terrible disease, which, of all diseases, was the one apparently least in want of a germ theory to account for its origin, for the theory of nerve irritation, to say the least of it, seemed a very plausible explanation. It is still matter of doubt, however, that a certain germ is the specific and only cause of tetanus, for there are some points in the history of the disease which are somewhat difficult to reconcile with the so-called "germ theory." Nevertheless facts brought to light by experimental research give the strongest possible support to the view that a particular bacillus is the specific cause of the disease.

That tetanus is a disease of an infective nature was first definitely proved, according to Baumgarten,† by two Italians, named Carle and Rattone, in the year 1884. They took pus from the wound in a tetanic patient, and inoculated rabbits, producing in them, in course of time, the characteristic symptoms of tetanus and a fatal issue. The same author indicates that there was a tendency to the acceptance of an infective origin for this disease ; and Senn, in his elaborate paper on "The Relation of Micro-organisms to Injuries and Surgical Diseases," states that "the infectious nature of tetanus was well known and established before the discovery of the bacillus of tetanus," and cites a number of cases in support of this.

To Nicolaier‡ and Rosenbach§ belong the honour of discovering the microbe of tetanus. In 1884 Nicolaier performed a large series of inoculations of different kinds of earth in mice, rabbits, and guinea pigs, and a disease was produced in about 50 per cent which closely resembled tetanus in man. A number of bacteria were always found at the point of inoculation, and amongst them a certain bacillus was invariably present. In the following year Rosenbach first showed that a similar bacillus to that of Nicolaier also existed in the tissues at the point of infection in the case of a man, and a joint proprietorship in the microbe was, according to modern

* Read before the Pathological and Clinical Society, 13th January, 1890.
† *Lehrb. d. Patholog. Mykologie.*
‡ *Deutsche Med. Wochenschrift*, 1884, No. 52.
§ Langenbeck's *Archiv*, b. xxxiv.

custom, thereby established. But it was not until some time afterwards that the identity of Nicolaier's bacillus of earth tetanus with Rosenbach's bacillus of tetanus in man was demonstrated.

The bacillus has been found subsequently by various writers also in cases of tetanus neonatorum and the traumatic tetanus of animals (including castration tetanus). Several authorities have confirmed Nicolaier's inoculation experiments, especially Beumer * and Bonome.† The former found, with Nicolaier, that the bacillus has a wide distribution in surface soil of inhabited land, and especially in sweepings and dust of the streets. An interesting result was obtained by Beumer in his experiments. Of 10 inoculations with soil from the sea-beach, tetanus followed in 2, whereas, of 10 inoculations with garden earth and street dust, tetanus followed in all but 1. If such be the case, it may be asked why does tetanus not appear more frequently? why is its development so rare, comparatively speaking, after injuries? The explanation of this apparent contradiction, given by Baumgarten, is that the free growth of the bacillus is hindered by the presence of oxygen, and that it is necessary to introduce it deeply into the areolar tissue, beyond the action even of the oxygen of the air. In connection with this, its frequent appearance after punctured wounds is significant.

The pure cultivation of the bacillus in artificial media is attended with considerable difficulty. Such difficulty was, indeed, at first experienced, that nearly three years elapsed, from the first discovery of the bacillus, before a pure culture was obtained. In making a culture from pus, for instance, the number of other bacteria present is great, and the difficulty mainly consists in getting rid of these. This was accomplished by a native of Japan, named Kitasato, in Koch's laboratory in 1887, by leaving a mixed culture for some days on an incubator, thereafter heating it half an hour to one hour in a water-bath, at a temperature of 80° C., then making plate cultures, and placing them in an atmosphere of hydrogen. By this means the contemporaneous bacteria were got rid of. Cultures grow in ordinary peptonised, faintly alkaline agar-agar, in blood serum, and in gelatine. The addition, 1·5 to 2 per cent of cane sugar to agar-agar, hastens the growth, and is associated with development of gas, which has a peculiar fœtid odour. The most favourable temperature is that between 36° and 38° C., and in agar-agar the culture appears in about

* *Zeitschrift für Hygiene*, b. iii.
† *Fortschritte der Medicin*, 1887.

three days as a greyish-white film in the tract of the needle puncture below the surface of the culture substance. The culture which I have is in gelatine, and appears near the bottom of the tube as several rounded colonies of a whitish-downy appearance in the tract of the inoculating needle. The pure culture has been inoculated in mice, rats, and rabbits, producing all the characteristic symptoms of tetanus. In the case of rabbits, it is pointed out that a larger dose of inoculation material is necessary. A striking peculiarity of tetanus is that the spasmodic contractions take place first in the neighbourhood of the inoculation, and it is also noteworthy that suppuration does not take place in the inoculation wound.

The bacillus is anærobic, and grows well in an atmosphere of hydrogen. It appears as a fine slender rod, and is described as having a bristly appearance, an appearance which is well seen in the preparation under the microscope. A much more characteristic feature is, however, its spore formation. One end of the rod swells out to form an oval, sharply margined, glancing spore, producing a form which may be roughly compared to a drumstick. This spore formation appears equally well within the body and in artificial media, and free spores are also to be found near the spore holding bacillus. The bacillus is easily stained with fuchsin or Loeffler's solution of methylene blue, and a contrast stain of the spore and the bacillus by a method which is practically the same as that employed in staining the tubercular bacillus, namely, Ziehl's solution and methylene blue, is that which is exhibited under the microscope.*

It may not be out of place to mention here Brieger's researches with the so-called ptomaines of the bacillus of tetanus, especially as they not only supplement and confirm, in striking manner, the observations of the authorities mentioned, but may be taken as pointing to a probable explanation of other specific infective processes. From cultures of the bacillus, Brieger † has succeeded in isolating four distinct toxic substances, the subcutaneous administration of each being attended with a definite group of symptoms, one of which is always spasmodic. No. 1 he calls tetanin, and the symptoms produced by it are those characteristic of tetanus. It produces the symptoms quickly, and the larger the dose the more quickly do they appear. No. 2 is designated tetatoxin,

* An excellent photograph of the bacillus, and of an artificial culture, will be found in Frænkel & Pfeiffer's *Mikrophotographischer Atlas der Bakterienkunde*, 5 Liefg.

† *Deutsche Med. Wochenschrift*, 1887.

and causes tremors, paralysis, and convulsions. No. 3 he calls "salzaure toxin," and it produces symptoms of tetanus, and also increases the functional activity of the salivary and lachrymal glands. No. 4, spasmotoxin, gives rise to severe tonic and tonic spasms, which prostrate the animal very quickly.

CURRENT TOPICS.

THE UNIVERSITY COURT.—Under the Universities (Scotland) Act, 1889, the Court has greatly increased powers, and a large addition to its membership. The Court has now been completely elected, and had its first meeting on the 24th January. The following is a list of its present members:—

Ex Officiis—
    1. RIGHT HON. EARL OF LYTTON, G.C.B., G.C.S.I., C.I.E., Rector.
    2. VERY REV. JOHN CAIRD, D.D., LL.D., Principal.
    3. HON. JOHN MUIR, of Deanston, Lord Provost of Glasgow.

Assessor nominated by Chancellor—
    4. SIR JAMES KING, Bart., LL.D., of Campsie.

Assessor nominated by Rector—
    5. JAMES GRAHAME, Esq., of Auldhouse.

Assessor nominated by Glasgow Town Council—
    5. JAMES COLQUHOUN, Esq., Ex-Magistrate of Glasgow.

Assessors elected by General Council—
    7. R. W. COCHRAN-PATRICK, Esq., LL.D., Under Secretary for Scotland.
    8. HECTOR C. CAMERON, Esq., M.D.
    9. SIR JOHN NEILSON CUTHBERTSON, Merchant.
    10. DAVID HANNAY, Esq., Writer.

Assessors elected by Senate—
    11. PROFESSOR GEORGE G. RAMSAY, LL.D.
    12. PROFESSOR WILLIAM LEISHMAN, M.D.
    13. PROFESSOR WILLIAM STEWART, D.D.
    14. ROBERT BERRY, Esq., LL.D., Sheriff of Lanarkshire.

The business was chiefly preliminary, consisting of arrangements for the work of the Court, and the appointment of committees. The Court is to submit draft ordinances for the consideration of the Royal Commission under the Act, and a committee was appointed to draw up these.

BRITISH MEDICAL ASSOCIATION (GLASGOW AND WEST OF SCOTLAND BRANCH).—The annual meeting of the branch was held on Thursday, 23rd January, in the Western Infirmary. Dr. H. C. Cameron, Glasgow, the president, occupied the chair. The report by the Council was submitted, and showed that the branch is in a flourishing condition, there being 182 members on the roll, as compared with 173 in the preceding year. The treasurer's report stated that, notwithstanding the very heavy expenditure last year, the accounts showed a balance on hand of £73. The following office-bearers for 1890-91 were then elected :—

President, . . .	DR. H. C. CAMERON.
President-Elect, . .	DR. W. HALDANE, Bridge of Allan.
Vice-Presidents, . .	{ DR. JOSEPH COATS. DR. D. MACLEOD.

Representative Member of Council, and on Parliamentary Bills Committee, British Medical Association.

DR. BRUCE GOFF.

Ordinary Members of Council.

DR. D. YELLOWLEES.	DR. W. J. MARSHALL, Greenock.
DR. J. GLAISTER.	DR. M'CALL ANDERSON.
DR. WALLACE, Greenock.	DR. E. M'MILLAN.
DR. A. ROBERTSON.	DR. GILMOUR, Duntocher.
MR. A. E. MAYLARD.	

Secretaries— { DR. A. NAPIER, Crosshill. DR. FREELAND FERGUS, 3 Elmbank Crescent, Glasgow.

The following gentlemen were appointed members of the Medico-Ethical Committee for 1890-91:—

Chairman, ...	DR. YELLOWLEES.
Secretary, ...	DR. BRUCE GOFF, Bothwell.

Committee.

DR. D. MACLEOD, Kilmarnock.	DR. ALEX. ROBERTSON.
DR. W. T. GAIRDNER.	DR. H. C. CAMERON.
DR. MARSHALL, Greenock.	DR. JAMES CHRISTIE.
DR. WILLIS, Baillieston.	DR. JOSEPH COATS.
DR. J. B. RUSSELL.	

A number of interesting cases and specimens were afterwards exhibited, and explained by the President, Professor M'Call Anderson, Professor George Buchanan, Mr. A. E. Maylard, and Dr. Joseph Coats.

PROFESSOR GAIRDNER ON INFLUENZA.—At the above meeting of the Glasgow Branch of the British Medical Association, Professor Gairdner spoke on the subject of influenza. This address will appear in full in our next issue.

VICTORIA INFIRMARY.—The following appointments have been made in connection with the Victoria Infirmary :— *Physicians,* Dr. E. Duncan and Dr. A. Napier ; *Surgeons,* Mr. A. E. Maylard and Mr. R. H. Parry ; *Medical Superintendent and Senior House Surgeon,* Dr. D. J. Mackintosh ; *Junior House Surgeon,* Mr. Andrew ; *Matron,* Miss Ross.

GLASGOW ROYAL INFIRMARY.—ANNUAL MEETING.—The following report was presented to the annual meeting of the qualified contributors and subscribers to the Glasgow Royal Infirmary, held in the Directors' Room, Merchants' Hall, on Monday, 27th January, 1890 :—In reporting on the affairs of the institution under their charge for the year 1889, the managers of the Glasgow Royal Infirmary beg to submit the following reports to them by the superintendent and the honorary treasurer on the state of their respective depart- ments :—Referring to the paragraph in last year's report regarding the Infirmary Medical School, the managers have now the pleasure to report that their efforts were entirely successful, and "St. Mungo's College" was duly incorporated in April ; and soon after coming into office the governors of the College made arrangements with the managers for absorbing and continuing (in terms of the Memorandum of Association) as the Medical Faculty of the College the Medical School in connection with the Infirmary. To the numerous changes rendered necessary, consequent on the new order of things, the managers gave the most anxious consideration. All necessary arrangements were made for carrying on the teaching with efficiency. Additional appointments, rendered necessary by the increased number of subjects of study presented in the reconstructed curriculum, were made. As it was necessary that wards be provided for the Professor of Clinical Medicine in the College, the holder of that office was appointed an extra physician to the Infirmary. The managers have reason to be satisfied with the several changes thus inaugurated, and expect that considerable permanent benefits will result to the Infirmary and its patients from the institution of the College in connection with it. For the more effectual carrying out of its purpose, the managers have given their assent to the transfer to the College of the buildings hitherto occupied by the Medical School, under reservation of the use by them of those parts presently occupied in connection with the dis- pensary ; and to this transfer the sanction of the general court of contributors and subscribers is now asked.

During the year considerable structural alterations and

improvements of the entrance and staircase in the middle surgical house were made ; and important improvements were also effected in the bath room and lavatory accommodation in the medical house. Further experience of the nurses' home and connecting corridor has confirmed the confident opinion the managers entertained of their utility, and the benefits that nurses and patients alike would derive from them.

More changes in the management and administration oc-curred during the past year than usually fall to be recorded. To the vacancy in the management, caused by the resignation of Dr. M'Vail, the managers elected Dr. Samuel J. Moore. A second vacancy occurred through the Faculty of Physicians and Surgeons having elected Dr. Perry, one of their repre-sentatives on the board, to be president, whereby he became a manager *ex officio ;* this vacancy the managers filled by the election of Dr. Bruce Goff, Bothwell. Dr. Middleton, one of the assistant physicians, resigned office during the year ; which vacancy was filled by the appointment of Dr. James Dunlop. Dr. Newman, the pathologist and curator of the Pathological Museum, also resigned office ; to this vacancy Dr. John Lindsay Steven was appointed. Owing to the great advance in the methods of investigation, and the increase and variety of work in this department, a re-arrangement and redistribution of work has been rendered necessary ; and it has been resolved to appoint a histological assistant to the pathologist. Miss Ross and Miss Thorne, the superintendents of day and night nurses respectively, also resigned their positions, on being chosen as matrons of the new Victoria Infirmary and the Ayr County Hospital. . . . They also gratefully acknowledge the services of the medical and surgical staff, and of the superintendent, matron, and other officials. In concluding this report, the managers record with extreme regret the death, on the last day of the year, of Dr. James Morton, who was for many years one of the surgeons of the infirmary, and afterwards for several years a manager, in both of which capacities he rendered valuable services to the institution ; and during the present month the managers have also been un-expectedly deprived, by death, of the valuable services and co-operation of Mr. James Kerr, the cashier, who, since his appointment in 1881, brought to the discharge of his duties an intelligence and zeal which secured the respect and confidence of the managers.

The following is a report of Dr. Thomas, the superintendent, of the patients admitted, treated, and dismissed during the year 1889, and comparison with the previous year :—

		1889.	1888.	Inc.
Admissions were,		5,408	5,043	365
Treated to a conclusion,		5,377	5,030	347
Died,		533	424	109
Mortality,		9·9 per cent	8·4 per cent	...
Died within 48 hours of admission,		134	126	...
Mortality (exclusive of these),		7·6 per cent	6 per cent	...
Remaining in hospital on 31st December, 1889,		558	527	...
Daily average resident,		538	515	...
Average residence,		35·41 days	36·58 days	...
Non-resident accident cases treated in wards,		1,747	1,499	...
Number treated under 15 years of age,		879	944	...
Died under 15 years of age,		60	54	...
Mortality under 15 years of age,		6·7 per cent	5·7 per cent	...
Lowest number in house,		479	445	..
Highest number in house,		598	562	...
Treated at dispensary—				
Medical, first visit,	10,068	...	...	...
„ visits afterwards,	3,908	...	...	...
		13,976	...	...
Surgical, first visit,	6,059	...	...	...
„ visits afterwards,	7,060	...	...	...
		13,119	...	...
Total,		27,095	25,846	...

"On the whole expenditure the cost of each fully-occupied bed during last year was £49, 6s. 7½d., against £47, 11s. 5¾d. for the year 1888; and the average cost of each patient treated to a conclusion was £4, 18s. 4d., against £4, 17s. 5d. In addition to the daily average number of 538 patients in the wards, there is a resident staff of 192, making a total daily average number of 730, against 705. This resident staff consists of superintendent, apothecary, house physicians and surgeons, 13; matron, 1 day and 2 night superintendents, and nurses, 106; female employees and servants, 69; janitor, porters, and plumber, 4—total, 192. The non-resident officials are the steward, tradesmen, porters, &c., to the number of 21; and there is a medical staff of 29 engaged in the treatment of the patients in the different departments of the infirmary. During the year the usual course of lectures to the nurses was delivered by Dr. Middleton and Dr. James A. Adams; and the thanks of the managers are again due to them for their gratuitous services. Since my last report various important improvements have been carried out in the medical and middle surgical houses. These were only rendered possible by the erection of the Nurses' Home, and I have pleasure in stating that they have already proved beneficial to the patients, and

have given satisfaction to those entrusted with the management of the hospital."

The financial statements for year ended 31st December, 1889, show that the total ordinary revenue from all sources amounted to £19,076, 8s. 5d., and the total ordinary expenditure to £26,540, 8s. 7d., being an excess of expenditure of £7,464, 0s. 2d. The revenue from subscriptions is £284, 10s. 7d. more than in 1888, and this increase is chiefly from public works. The expenditure is increased by £1,999, 17s. 1d., and this increase has arisen from the resident patients having been considerably more numerous than in the previous year, the additional accommodation provided by the vacated nurses rooms being all required for those seeking admission to the house.

I cannot refrain from calling special attention to the continued great discrepancy between ordinary revenue and expenditure—this year nearly £7,500—in the hope that some steps will be taken to correct, if possible, so glaring an anomaly. It is fortunate for the Infirmary that the legacies received during the year are exceptionally large, being no less a sum than £26,042, 5s. 5d. This result is largely owing to the thoughtfulness and generosity of Mrs. Margaret Stewart M'Ara, of Georgetown, Demerara, who died in August, 1888, bequeathing to the Royal Infirmary the whole of the residue of her estate after the payment of certain private and public legacies. The residue was estimated at about £18,000, and four instalments of it have already been received, amounting to £17,784, 9s. 11d. I gladly take this opportunity of acknowledging indebtedness to Mrs. M'Ara's executors— Messrs. Patrick Playfair Fairbairn, of Georgetown, and John Vernon Vaughan, of Berbice—who, in the interests of the Infirmary, have given much attention to the favourable realisation of the estate under their control.

Obituary.

DR. JAMES MORTON.

ON the last day of 1889 there passed suddenly from the midst of us one of the few left of the older generation of well known Glasgow medical men. Dr. Morton died in harness, while out on professional duty. For several months he had known that the end would come thus abruptly; and, with this knowledge full in view, he had calmly resolved to pursue the ordinary tenor

of his life as far as his malady would permit, and this he
did with scarce perceptible abatement of his old zest and
cheerfulness.

Dr. Morton was what is usually called a self-made man.
Born in Ochiltree, Ayrshire, in 1820, he was mainly indebted
to his own indomitable pluck for all beyond the elements of
a general education. His resolution to raise himself was firm,
and he saw that the means of doing so must be provided
by the labour of his own hands. In conversing with the
writer of this notice, shortly before his death, about his early
struggles, he said in effect that their reaction on his character
was the making of him. About the age of 21 he came to
Glasgow, and entered himself as a student at what was then
called the Andersonian University, which included a flourish-
ing Medical School. In the classes he took from the first
a distinguished position, which he maintained throughout.
On the completion of his medical studies he was admitted
a Licentiate of the Royal College of Surgeons of Edinburgh
in 1844, and in the subsequent year graduated M.D. at the
University of St. Andrews. Almost immediately after quali-
fying he settled in Glasgow, first in Apsley Place, on the
south side of the river, from which district he changed to
a more central position of the city in 1851. In 1855, on the
appointment of Dr. Easton to be Professor of Materia Medica
in the University, Dr. Morton was elected his successor in
the Chair on that subject in the Andersonian. From this
Chair he taught Materia Medica to a whole generation of
medical students, demitting office in 1888. How assiduously
and successfully he laboured to render a somewhat dry subject
interesting, his old pupils well know. With all classes of
students he was eminently popular, being endowed with the
sympathetic nature which could understand the aspirations,
the feelings, and even the failings of students.

To the literature of the subject of his Chair he did not
contribute, unless we are to place under this head a paper,
published in this *Journal* in 1864, " On Certain Abuses of
Caustics," which, however, was probably suggested by his
experience as a surgeon.

It is as a surgeon that Dr. Morton's name will be best
remembered. In 1859 he was elected Surgeon to the Royal
Infirmary, having previously gained experience in office in
the Dispensary of that institution ; and, except for a break
of two years, he continued Surgeon to the House till he
retired in ordinary course in 1885. As a surgeon Dr.
Morton was characterised by coolness, self-reliance, pains-

taking, and considerable fertility of resource. On the introduction of antiseptic surgery by his colleague, Mr. (now Sir Joseph) Lister, Dr. Morton gave the system what he considered an adequate trial, but remained unconvinced of its superiority, even though his other colleagues in the hospital became converts to the new faith. In 1871 Dr. Morton tried the effect of injecting an iodo-glycerine solution in a case of spina bifida, which resulted in a cure. Other cases of the kind followed, with more or less marked success; and in 1877 he had so fully satisfied himself of the practicability of curing carefully selected cases of this deformity hitherto virtually considered as fatal, that he gave his own experience and that of a few others who had tried his system, digested in a monograph—"The Treatment of Spina Bifida by a New Method." A second edition of the work, with the pathological and clinical sections greatly extended, was published by him in 1887. Two years previous to this latter date he had the gratification of finding his method endorsed by the Special Committee of the Clinical Society of London as the best and the only one which they felt justified in recommending.

As a professional man Dr. Morton did not pass through life undistinguished by honours. He was elected president of the West of Scotland Branch of the British Medical Association, and in 1874, President of the Medico-Chirurgical Society. In 1886 he was elected President of the Faculty of Physicians and Surgeons of Glasgow, of which body he had become a fellow in 1851, and of the Examining Board, of which he had long been a member. He was re-elected President for other two successive years, and as such had the honour, in 1888, of receiving the British Medical Association in the Kibble Palace, Botanic Gardens, on the occasion of the garden-party given by the Faculty to the members of the Association and their friends. It was on the occasion of this visit of the British Medical Association to Glasgow that the University conferred on Dr. Morton the degree of LL.D.

Regarding the personal qualities of Dr. Morton, little need be added to what has been already said. His strong self-reliance was unaccompanied by any corresponding love of self-assertion. His standard of professional ethics was high. His inveterate love of jocularity was always tempered by good nature, so that he made few enemies. During his later years his character visibly mellowed, its outstanding features becoming softened and rounded towards the close.

Dr. Morton was twice married, and is survived by a widow and family.

CORRESPONDENCE.

"THE RUSSIAN EPIDEMIC."

To the Editors of the " Glasgow Medical Journal."

SIRS,—As there is much diversity of opinion with regard to the so-called Russian epidemic, I think it may be well to state shortly the opinion which I have formed with regard to it; because, on the one hand, the alarming reports which are appearing from day to day in the public prints are calculated seriously to alarm the timid; while, on the other, many people have evinced a tendency to be foolhardy, and to neglect attacks of the disorder, thus endangering their lives.

Every winter, in connection with atmospheric vicissitudes, we have more or less of influenza in our midst, and it is decidedly contagious, as is shown by the frequency with which it spreads in a household until almost all of the members have been attacked. This I have experienced frequently in my own family.

For some weeks we have now been exposed to a recurrence of this complaint, which in no way differs materially from ordinary influenza, except in so far as it is much more universal than usual, and considerably more severe, so that a larger number succumb to it. The present epidemic is, to my mind, satisfactorily accounted for by the very unusual climatic conditions—the excessive mildness of the season, coupled with the extraordinary amount of moisture in the atmosphere; so much so, that our streets are rarely, if ever, dry; and the mortality is chiefly among those who are aged, or broken down in health, or who incautiously expose themselves while suffering from the disease. The complications most to be feared are pneumonia, bronchitis, pleurisy, and rheumatism, and these generally result from exposure. If all persons who are attacked could be induced to go to bed, keep themselves warm, and in a uniform temperature at the outset, and remain there until the influenza had run its course, not only would the duration of the disease be materially shortened, but the mortality would be very trifling indeed. In almost all the fatal cases which I have seen in consultation, death resulted from some complication—notably pneumonia—as the result of neglect of the most ordinary precautions.

It would be interesting to know if my experience is in accord with that of my professional brethren in Glasgow, and for this reason, mainly, I have ventured to address you.— I remain, Sirs, yours faithfully,   T. M'CALL ANDERSON.

2 WOODSIDE TERRACE, *21st January, 1890.*

REVIEWS.

A Text-Book of Human Anatomy, Systematic and Topographical, including the Embryology, Histology, and Morphology of Man, with Special Reference to the Requirements of Surgery and Medicine. By ALEXANDER MACALISTER, M.A., M.D., F.R.S., F.S.A., Professor of Anatomy in the University of Cambridge. London : Chas. Griffin & Co. 1889.

THE science of anatomy has of recent years developed so rapidly that the teaching of medical students within the limits of time allotted to this branch of professional study has become a difficult task. *Quain's Anatomy*, the standard text-book in this country, contains in its latest edition fully 1,700 pages of letterpress and about 1,200 illustrations. It is true that there are many other works of smaller size, designed specially for the requirements of students, but these, in all cases, have been reduced in bulk at the expense of one portion or another of the subject. The best teachers in the country are agreed that it is not alone the dissecting room details which should be taught, important as they undoubtedly are, but that all instruction should be based upon a foundation, at least, of morphology, and that a knowledge of the principles of embryology is essential to complete an adequate training in anatomy. This, indeed, has been the habit for many years in the higher class schools throughout the country, particularly perhaps in Scotland, where such men as Goodsir and Allen Thomson early introduced the system of teaching anatomy as a science to medical students.

The importance of Professor Macalister's object cannot easily be over-estimated. Dealing as the book does with histology, embryology, and morphology, in addition to the systematic and topographical details of human anatomy, it seeks to furnish the student, in one volume of convenient size, with all that is essential for a thorough knowledge of his subject. A difficult task truly, but no one, perhaps, in virtue of his long experience as a teacher, his thorough acquaintance with the most recent work, and the clearness with which he can express his views, is better fitted to undertake it than the professor of anatomy at Cambridge.

The duty of the critic is not an easy one. Whether the book will fulfil all that it seeks for, can only be determined after it has been tested in the great teaching schools, and there

is no doubt that it will be carefully tried; but there are points in the arrangement and method of handling the subject that require notice in a general review such as this.

The book begins with a chapter on embryology, dealing chiefly with "the evolution of form," then follows the histological portion of the work, and here are to be found further descriptions of the development of the muscular, nervous, and vascular systems. The next section is devoted to the skeleton and joints, and contains a short account of the origin and growth of the bones. The soft parts are described in the order in which the student meets them in dissection, beginning with the back, and passing on to the arm, thorax, abdomen, lower limb, and head and neck, the different viscera, or portions of viscera, being taken up in topographical order along with blood-vessels, muscles, and nerves.

For this arrangement it is maintained that it is the most natural, inasmuch as the student learns, or ought to learn, his anatomy from dissection. But it must be remembered that, on account of the subdivision of the body into parts for the convenience of dissection, in many cases the student, in the region allotted to him, can only study a portion of a structure. Supplementing his dissection by reading, he finds at once in a systematic text-book the full description, while under such an arrangement as is here adopted, he will, with the help of the index, have to follow the description often in several different places, sometimes far apart from one another. As a matter of fact, teachers find that few students rely on a topographical book alone, though there are a number of good manuals which adopt that system. In different schools of medicine, different methods of dissection are, within certain limits, adopted, and as it is hopeless to expect uniformity, no topographical work can describe structures in the order in which all students will find them. We therefore regret that, in such an important work as this, Professor Macalister should have made use of an arrangement so unsuited to his object.

An objection which will be taken by many, but which is to a large extent inherent in the scope and size of the work, will be found in the absence of discussion on questions which, from their very nature, must be matters of opinion and theory rather than of demonstrated fact. The sections devoted to embryology and morphology are full of debatable matter; and even where homologies are generally recognised, the author, hampered by restrictions as to size, has not had at his command the space in which to fully explain them. In the chapter on general embryology the primitive streak and blastopore

are treated of in a short paragraph, and the shifting of the embryonic area from the edge of the blastoderm, where it was originally placed in lower forms, is mentioned. This is an extremely complicated and difficult subject, and we question the advisability of alluding to it without explanation. Similarly a brief account of the early development of the heart is given, and there is introduced to illustrate it a figure (No. 25) taken from Kölliker; the original lettering remains on the figure, but is nowhere explained in the text, notwithstanding that the drawing contains one point at least that is likely to prove confusing to students. In the description of the nasal fossæ the remains of the organ of Jacobson are noticed, but no information is given to the student as to the nature of the organ itself. Examples might be increased. In all the accounts of the development of special organs or systems, as the eye or the blood-vessels, the necessity to be brief, incumbent upon the author, is a disappointment to the reader. Short statements are apt often to appear dogmatic, and we believe that it would have been better had Professor Macalister allowed himself a freer hand in dealing with morphology and embryology.

Scattered through the book one finds much that belongs to the physiologist rather than the anatomist; thus the description of the muscular system is complicated with matter which might have been relegated to another place. But there is sometimes danger in introducing physiological diagrams into anatomical surroundings. Fig. No. 666, designed to show that the salivary glands are innervated chiefly by the facial and sympathetic nerves, is liable to mislead the student into the belief that the sympathetic filaments are derived at once from the first cervical ganglion, and that the otic ganglion gives a direct branch to the parotid gland.

We do not agree with Professor Macalister that the " names of those authorities whose work has advanced our knowledge in each department are useless to the ordinary student." Even if it were so, one cannot limit a book of this nature to the " ordinary student," who may, perhaps, be supposed to take no interest in the subject beyond his preparation for examination. The fact that the author has been compelled in so many instances to allude to points rather than to explain them, makes it all the more necessary that names and references should have been given to enable the student to follow his studies further. Throughout all the sections of the book, Professor Macalister has shown himself acquainted with the most recent work upon the subject, but the amount of

this has of late years become so large, that few can keep abreast of the times in respect of it. To all those whose interest in anatomy is more than that of the ordinary student, the omission of references will seem a serious defect in this, the latest general work upon anatomy. It would be matter of regret were larger works to be displaced altogether by one without lists of the literature ; and we trust that in a subsequent edition Professor Macalister will reconsider his position. The figures are many of them familiar, and their sources might easily have been acknowledged without detracting from the value of the book from the student's standpoint. Talking generally, they are exceedingly good—many of them being of great beauty ; here and there some are to be found which lose in precision of outline from the depth of the shading, as in No. 603, and one or two others in the section on the lower limbs.

Our remarks, so far, have been of a general nature. It is necessary to glance briefly at the different sections into which the book is divided. With regard to the embryological portion, we think that more attention should have been paid to the special development of the organs. Nothing helps a student to understand a difficult part, such as the eye or the brain, so much as an explanation of its development ; but all through, the descriptions given are too general and too brief. The peritoneum, however, is elaborately gone into, from a developmental point of view ; indeed, the description must be set down as one of the best in the book ; but the pleura and pericardium, though described, are not explained as they might have been.

The section devoted to general histology is, so far as it goes, so good, that one cannot help wishing that more space had been devoted to it. It is no doubt true that histology is best treated in the laboratory ; but teachers of medical students know that at present there is a real need of a short summary of well selected facts. In the general section of the work the histology of the organs is gone into in a brief, but very clear manner, and is abundantly illustrated.

The bones, joints, and muscles are well described, and the plates which accompany them are often very beautiful, and the same may be said generally of the vessels and nerves. The remarks upon the morphology of the muscles will be found specially interesting. Here and there throughout this section descriptions and opinions will be found in which every one will not agree with the author, but in an anatomical text-book that is unavoidable. We are not disposed to concur

with the writer in his description of the erector and multipidus spinæ muscles, nor are we prepared to admit that all the branches ascribed to the otic ganglion, however probable they may seem from physiological experiment, have, as yet, been confirmed by dissection.

Throughout the whole of this portion of the book the student will be often troubled by the nomenclature. Double nomenclature is becoming a serious difficulty in human anatomy; and, though Professor Macalister has admittedly done his best to keep down the evil, much, we think, still remains to be done. We cannot quite understand the author's position in leaving out all reference to the literature, and yet naming, in such a large number of cases, the part after the investigator. A few examples may be given—the ganglia of Andersch, Bock, Ehrenritter, Weisberg, and Weitzer (one is compelled to think that German workers are responsible for much of the double nomenclature); Mohrenheimer's space, Macdowel's frænum.

A curious instance of the variety of nomenclature, and the confusion likely to arise from it, is to be found in connection with the names applied to the ducts of the sublingual glands. These ducts vary to some extent; but the usual arrangement is, that one somewhat larger than the others, collecting from a number of lobules, opens either into, or in close proximity to Wharton's duct, from the submaxillary gland. In addition to this, a number of small ducts open directly into the floor of the mouth. Henle names the single duct the "duct of Bartholin," and the separate ones the "ducts of Rivini;" but points out that these smaller ones were first described by Walther. Quain practically adopts a similar nomenclature, omitting the name of Walther; but Professor Macalister calls the larger channel the "duct of Rivini" ("described also by Bartholin"), and names the smaller ones "ducts of Walther."

The chapters on the brain and spinal cord, the ear, and the eye form a special feature of the work. The student will find in them a judicious selection of all that is really valuable in the most recent researches, and they are illustrated by numerous figures.

The publishers, Messrs. Griffin & Co., have done their work exceedingly well. The printing is, however, too close, and will be found, upon prolonged study, somewhat tiring to the eye, but this has been necessary to keep the book within limits as to size. Here and there, more especially in the descriptions of the figures, little errors have escaped the proof readers, but these are in no cases likely to seriously mislead.

On Bronchial Asthma: its Pathology and Treatment. By
J. B. BERKART, M.D., late Physician to the City of London
Hospital for Diseases of the Chest. Second edition. London:
J. & A. Churchill. 1889.

NOT having seen the first edition of this book, we cannot say
what improvements have been made in the second; but a
perusal of the latter has convinced us that there is still much
room for amendment in a third, should such ever be required.
We regret that we cannot recommend it to our readers, the
subject being one on which there is plenty of room for more
definite and exact information than we yet possess. Dr.
Berkart has evidently spent time over it, and has read widely;
but he has not managed to present his views in a readable or
convincing form. While the publishers have done all that
good paper and good type could do to make his pages attrac-
tive, the author has carried out the punctuation in a most
exasperating way, so that one is constantly under the necessity
of re-reading sentences to make out the meaning intended to
be conveyed.

Having passed in review and condemned all the existing
theories of the pathology of bronchial asthma, the author
proceeds to give the clinical history of the disease, which he
divides into acute and chronic forms. It will probably be
news to most of our readers to learn that the first symptoms
are seated in the pharynx, from which the irritation extends
to roof of mouth, nose, internal ears, and eyes, before it attacks
the lower respiratory tract, and that among the early signs is
a croupous exudation in the pharynx, the tonsils, and the
uvula. It will also surprise them to know that even in the
chronic forms the temperature always rises, most frequently
ranging from 101° F. to 103° F. "In cases of great cyanosis,
heat is retained and becomes very oppressive, so that even in
the winter, asthmatics prefer to have no fire in their rooms, to
keep their windows open, and beg to be cooled by fanning."
Disturbances of secretion, digestion, and circulation are
described, and then the physical signs in the lungs. In this
section, and throughout the book, the terms used to describe
the phenomena observed on percussion and auscultation are
either employed very loosely, or would be held by most men
to indicate other conditions than those met with generally in
asthma. Indeed, from the clinical description, and from some
of the cases recorded (especially one of pneumonia on page 175),
it is clear that Dr. Berkart confounds the physical signs of
collapse and condensation of the lung with those of asthma.

In the diagnosis, however, the symptoms and signs are all of secondary importance to the examination of the sputum, the peculiar bodies found in which remove all doubts. That the sputum should be of great diagnostic importance is not to be wondered at when we reach the author's view as to the pathology of asthma—viz., that it is " an acute and progressive, nay, almost erysipelatous, form of inflammation, which extends from the pharynx upwards and downwards, and is accompanied by a croupous exudation." It is this exudation which causes the dyspnœa : " the plug, coming as it does from below upwards, acts in the manner of an expiratory valve, allowing the access, but preventing the egress, of air." How this extraordinary statement comes to be made we cannot say ; we had thought that a plug, moving from the narrower to the broader portion of a tube and back again to the narrower, must necessarily allow of the egress and prevent the access of air.

The most important of the predisposing causes is said to be rickets, causing smallness of the lungs, with diminution in the calibres of the trachea and bronchi, and impairment of the nutrition of the lung substance. All this, of course, is largely hypothetical, but it suits the author to put it forward in support of his view. His method of reasoning is exemplified in the following paragraph with reference to the size of the heart in asthma:—" In some cases, however, abnormalities may be suspected. Certainly, the size of the fist is no reliable standard. But there is this striking fact, that a number of asthmatics, perhaps the best-built amongst them, and even those accustomed to manual labour, have unusually small hands. At the same time, there is, generally, an amount of cyanosis, which is evidently not explained by the state of the lungs." Among the predisposing causes Dr. Berkart can find no place for climate or locality ; the idea that an attack of asthma can be caused by residence in any particular locality is scouted as preposterous. This is all the more to be wondered at when we find that he believes the exciting cause to be, in all probability, a streptococcus (frequent in the illustrations which embellish the volume), which surely might be supposed to be more prevalent in some places than in others.

Into the differential diagnosis of asthma, and its various complications and sequelæ, we do not intend to follow Dr. Berkart, nor have we much to say on the treatment he advises, for it is pretty much such as we all follow, except that he lays stress on the injection of morphia as the best remedy for the relief of the paroxysms—a method of treat-

ment often very serviceable, but perhaps not yet in general use.

It is a pity that the author, who has apparently seen a large number of cases, has not presented the results of his observations in a more accurate and scientific shape. This is not the style of clinical work which commends itself to us, and therefore we cannot commend it to our readers.

Dermoids, or Tumours containing Skin, Hair, Teeth, &c. By J. BLAND SUTTON, F.R.C.S., Hunterian Professor, Royal College of Surgeons, England; Assistant Surgeon, Middlesex Hospital. London: Baillière, Tindall & Cox. 1889.

THE contents of this little book formed the substance of the Hunterian Lectures delivered by the author at the Royal College of Surgeons in February, 1889. These lectures have already appeared in the medical journals, but collected thus, in a compact and neat little book, they form a most readable and instructive memoir.

Mr. Sutton is an original thinker, and an original worker, and the time and attention which he has devoted to the subject render his views the more worthy of consideration.

The contents of the book may be best judged from a cursory glance at the matter dealt with in each of the seven chapters comprising the work. The first chapter is taken up with a detailed description of the various elements found in dermoids. The second deals with the identity and mutability of skin and mucous membrane. This is shown from the fact that in animals, if not in man, the skin, on the one hand, may possess some of the elements belonging to typical mucous membrane, while mucous membrane, on the other hand, may possess constituents peculiar to typical skin; and also, from a developmental point of view, since the mucous membrane of the mouth and the conjunctiva are both of epiblastic origin. The third chapter treats of sequestration dermoids; that is, dermoids arising in detached or sequestrated portions of the surface epiblast. The fourth chapter discusses the intestinal origin of the canal of the central nervous system. The subject is not unconnected with considerable difficulty; for that reason, therefore, there is greater need that the text should be clearly written and the diagrams properly explanatory. Unfortunately, there is much need of lucidity; in both, letters are used in the text, to which it is impossible to find

any reference in the diagrams; and the diagrams also are poorly described and badly lettered. Mr. Sutton may be quite clear in his own mind upon the intestinal origin of the canal of the central nervous system, but he hardly succeeds, in the short chapter he has devoted to the subject, in producing the same feeling in the mind of the reader. One would hope that, in a future edition, the author may see his way to considerably lengthen, and thereby better elucidate the interesting fact of regarding the central canal of the spinal cord as a disused segment of the primitive alimentary canal.

The fifth chapter is headed "Tubulo-dermoids," and deals with congenital tumours connected with obsolete canals. Of these tumours there are three kinds:—Dermoid cysts, dermoid tumours, and thyroid-dermoids or congenital adenomata. The third group is peculiar to obsolete canals, and is best illustrated by the congenital sacro-coccygeal tumours.

The sixth chapter is devoted to conditions affecting the bronchial fistulæ. Some little space is given to the subject of auricular fistulae, the author adopting His's explanation, that these fistulae arise from a non-complete union of the small elevations which develop around the orifice of the external auditory canal, and which, when completely united, constitute the pinna.

The seventh and concluding chapter discusses ovarian dermoids. These are described under the three parts in which they arise—(1) the oöphoron; (2) the paroöphoron; (3) the parovarium. In tumours arising from the oöphoron, Mr. Sutton combats very strongly the theory that they arise from tissues of the ovary other than those connected with the follicles. He thus concludes—"On morphological, embryological, and pathological grounds, the identity of ovarian follicles with the acini of glands is complete, and I have no hesitation in regarding the follicles of the ovary as mucous crypts. As the membrana granulosa is potentially mucous membrane, and as skin and mucous membrane are morphologically identical and convertible structures, cysts containing skin or mucous membrane and their appendages are not more remarkable than cysts and neoplasms occurring in connection with other glands."

To the surgeon, who takes a deeper interest in his work than merely being satisfied with the clinical features of his case, and to whom etiological and pathological considerations are factors of importance as well as of interest, this little volume will prove of much value.

A Manual of Nursing, Medical and Surgical. By LAURENCE
HUMPHRY, M.A., M.B. London: Chas. Griffin & Co. 1889.

THIS little volume raises the question—How much should a
nurse be taught ?—more imperatively than any other work on
nursing with which we are acquainted. It forces the question
on us so strongly, that we feel all other considerations are
secondary, except, of course, the accuracy of the work. It is
not—Is the writer clear or otherwise ? Do his opinions appear
to be matured and drawn from a long experience ? But—
Does he know how much, or simply, how a nurse should be
taught ? We think not. And having said so, we feel bound
in fairness to state, as explicitly as we can, our own opinion.
We think a nurse should be taught—(1) her special duties,
and (2) such things as directly explain or illustrate these
duties, or aid her in acquiring a thorough knowledge of them.
We doubt, however, if the author himself will contest this.
We have probably only shifted the ground of dispute to what
is, and what is not, such an aid as we have indicated. We had
better, therefore, give an example from the work itself of
what we think is neither the nurse's province nor an intro-
duction to it. Under "pulmonary consumption—phthisis"
she is told the following (p. 65):—

"*Management.*—Those invalids who, for various reasons,
are unable to leave England and seek a climate suited to their
condition, should be recommended to make such changes in
their mode of living as may tend to remove, as far as possible,
any injurious influences which may have been productive of
the disease, or which in any case serve to increase it. Amongst
those hurtful influences are :—

"1. Occupations where dust or small particles fill the air,
and cause bronchial irritation—for instance, the trades of
stone-masons, miners, and grinders.

"2. Over-work, excitement, bad habits, such as indulging in
stimulants, and excess of any kind, are also predisposing causes.

"3. Defective ventilation and overcrowding, again, produce
the same result, and are the most important factors in exciting
tubercular complaints.

"On the other hand, ventilation and plenty of fresh air are
potent preventives, and invalids should be instructed to keep
their windows open in the day, and, when possible, at night,
and should be encouraged to go out of doors when the weather
is sufficiently fine.

"For the poorer classes an out-of-door occupation is the most
healthy. A dry bracing atmosphere, with plenty of sun, and

free from wind, is the most favourable, and a residence situated on a hill, protected from the north and east, with a dry soil, is most suitable.

"Want of food and defective assimilation diminish the power of resistance and hasten the disease, and loss of flesh may precede the development of the consumptive symptoms when plenty of food can be obtained, but is not digested."

The author then speaks of diet and the administration of cod-liver oil, to which we take no exception.

But we do hold that the above is *not* the kind of instruction a nurse should receive, and the quotation is a fair example of what we meet with on almost every page, and constitutes, in our opinion, the weakest point in the book. In every sense there is too much taught. The work may be said, indeed, to form a manual of elementary anatomy, physiology, and practice of medicine—minor surgery and surgical appliances being thrown into the bargain, with a sprinkling of obstetrical nursing and invalid cookery, with which to finish up. The author's ability has been mainly shown in bringing within such a small compass a large amount of information that should be interesting to a nurse who is already qualified for her own immediate duties.

The work is fully and carefully illustrated, although we notice a few woodcuts that appear to be unnecessary, and in one case incorrect. For example, the diagrammatic sketch of two pulmonary lobules (from Kölliker apparently) on p. 51 is hardly essential, and it is not stated to be magnified at all, while it is so about twenty-five times.

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Laparo-Hystéropexie Contre le Prolapsus Utérin (Nouveau Traitement Chirurgical de la Chute de l'Utérus). Par PAUL DUMORET. Paris: E. Lecrosnier et Babé. 1889.

IN cases of laparotomy it has not been unusual for operators to take advantage of the opportunity to raise the fundus of a prolapsed or retroflected uterus, and fix it to the abdominal wall by the sutures closing the abdominal wound. M. Dumoret has been able to collect from medical literature a by no means exhaustive list of 14 cases, in which either the uterus itself, or the stump of the uterus, or the stump of an ovarian pedicle, has been thus joined to the abdominal wall. By "laparo-hystéropexie," however, M. Dumoret means the performance of laparotomy for the express purpose of curing prolapsus by this method of fixation, even though there

be no abdominal tumour or other indication calling for laparotomy.

As performed by M. Terrier, the operation of "hystéropexie" consists of (1) laparotomy; (2) elevation of the fundus uteri; and (3) passage of three sutures, through the edges of the abdominal wound (not including the skin), and through the anterior wall of the uterus, one at the junction of the cervix with the body; another at the level of the fundus; and the third midway between them. When these sutures are tied, the anterior surface of the uterus is brought up against the posterior surface of the abdominal wall—a position which is not the normal one. (4) The abdominal wound is then closed with silver sutures; and (5) antiseptic dressings with drainage applied. "The prognosis is that of uncomplicated laparotomy.'

Of cases thus deliberately performed for prolapsus, M. Dumoret has collected eleven—three of which have been done by Terrier. Eight of the eleven were performed within the year preceding the publication of this book, and among the eight cases one death occurred.

Laparotomy, even when "uncomplicated," has not yet become so free from danger that it can be performed without considerable hesitation. Were it so, "hystéropexie," as M. Dumoret proposes it, and as it is done by his master, M. Terrier, would, undoubtedly, give great promise of success in the cure of prolapse, but the time since the performance of the operations is evidently still too short to determine whether the cure will prove a permanent one. In any actual case, the decision for or against the operation must depend upon the estimate of the dangers of the prolapse itself, which, in general, are few and indirect, and those of laparotomy which are always considerable. Few British surgeons, we think, would agree with M. Dumoret in asserting that "the opening of the peritoneum, with antiseptic precautions, is an operation without peril." And probably no gynæcologist in this country would resort to operative treatment without a patient trial of pessaries for prolapse, though, as M. Dumoret says, "they are only palliative, have a septic tendency, and may even give rise to further troubles" when they are left neglected in the vagina.

Hysteropexy will probably retain its place, and even become more general as an operation complementary to laparotomy, when the latter is performed for some disease incapable of relief by other means. But laparo-hysteropexy can hardly ever become a common operation for prolapse. Both patient and physician will be content to try other methods, which,

though not curative, yet give promise of relief without danger,
before resorting to a method which involves direct danger to
life.

The enthusiastic advocacy of hysteropexy, however, which
marks this book, is based on a genuine love of thorough and
radical treatment of disease in preference to mere palliation.
This radicalism, which is so strong a feature of the young
Parisian school to which M. Dumoret belongs, while not
without evident dangers, must be regarded with satisfaction,
as carrying with it the promise of ever higher achievements
in the Art of Healing.

A Manual of Practical Anatomy. By D. J. CUNNINGHAM,
M.D., Professor of Anatomy and Chirurgery, University of
Dublin. Part I: Upper Limb, Thorax, Lower Limb.
Second edition by the AUTHOR, assisted by H. St. JOHN
BROOKS, M.D., Chief Demonstrator of Anatomy, Trinity
College, Dublin. Edinburgh : Maclachlan & Stewart. 1889.

THIS is the second edition of Professor Cunningham's well
known " Dissector's Guide," which was published first in 1879.
The first edition of this part of the work covers some 200
pages, but the fact that the second edition takes up more than
400 is not so much to be set down to the rapid growth of
anatomy during the last ten years, as to the fact that the
author has very considerably enlarged the scope of the work.
The book is now a descriptive manual of practical anatomy,
and it is designed for use in the dissecting room. As might
be expected from the name of the author, the descriptions are
exceedingly good, and leave little to be desired in point of
accuracy and style. The student who faithfully follows the
directions and attends to the descriptions given will rise from
his dissection with an exceedingly complete knowledge of his
part. Particularly complete is the description of the pleura.
The lines of reflection have been very carefully traced by the
author, and will be found to be much more accurately given
than in many other text-books. For the verification of his
observations Professor Cunningham is indebted to Dr. St. John
Brooks, and cordially acknowledges the assistance.

There are 70 illustrations, all of them well executed and
carefully explained, but several of them represent sections.
We cannot refrain from recording our objection to the
representation of sections, more especially longitudinal sec-
tions, for the purpose of teaching students. In a longitudinal
section a very little deviation of a structure, such as a vessel

or a nerve, to one side or another, though easily understood by a practised anatomist, is very liable to confuse a student. Besides, such sections serve very little purpose. It is no doubt possible to study the anatomy of the adult, as one does that of the embryo, by a complete series of sections, but the method can only be regarded as satisfactory when dissection is impossible.

We can confidently commend Professor Cunningham's book as a good manual of practical anatomy to all who, with the author, believe that the student should carry with him to the dissecting room a complete account of the parts which he is engaged in dissecting.

The Town Dweller: His Needs and His Wants. By J. MILNER FOTHERGILL, M.D., with an introduction by B. W. RICHARDSON, M.D., LL.D., F.R.S. London: H. K. Lewis. 1889.

THE writer of this little work has passed beyond the touch, beyond the scope, of human criticism, and there is nothing in the subject, as he has treated it, that imperatively demands a rigorous review in our pages. The "Town Dweller," we need only say, is regarded in his relation to " His Dwelling," " The Air he Breathes," " The Food he Eats," " His Beverages," &c. Under these attractive titles we have, however, nothing that is new. As to the literary character of the book, we willingly believe that the writer left little more than memoranda of stray thoughts regarding the hapless town-dweller, and that, had he lived, he would have presented his views in a more fitting form. What we condemn is the "puff" in the form of an introduction by Dr. Richardson. He is the reviewer; let others hold their peace. Well, we shall only remark that we think he would have done his late friend a better service had he supervised the MS. with some little care before it went to the press. The following may be taken as examples of many phrases and clauses which appear in the form of complete sentences. "Saying to a hospital patient suffering with the night sweats of phthisis." "Also the difference betwixt a boiled and a baked potato." "While recently in the East eels made their appearance in considerable quantities in the water-pipes." One would hardly guess that the author intended this last to be only part of a sentence, meaning "*and* recently in the east *end of London,*" &c. Some one surely might have been more kind.

MEETINGS OF SOCIETIES.

MEDICO-CHIRURGICAL SOCIETY OF GLASGOW.

Session 1889-90.

Meeting V.—13th December, 1889.

Surgical Section.

The President, William Macewen, M.D., *in the Chair.*

I.—CASE OF SUTURE OF THE MEDIAN NERVE AND TENDONS IN FRONT OF THE WRIST.

By Mr. H. E. Clark.

The patient, a girl of 19 years of age, put her hand through a pane of glass and sustained a wound of the forearm about $1\frac{1}{2}$ inches above the wrist-joint. The surgeon who first saw the case plugged the wound with lint and sent the patient to the Royal Infirmary. Three days after the injury, Mr. Clark removed the packing, and found that the radial artery had been cut across, as well as the median nerve, and the superficial and deep flexors of the fingers, the pronator quadratus muscle being freely exposed. The ulnar artery and nerve, and the radial and ulnar flexor muscles were not severed. The packing had so separated the tendons that the distal ends were difficult to find, and it was impossible to be quite sure that the right ends were adjusted. The ends of the severed median nerve were freshened with scissors, and great care was taken in their approximation. Fine chromicized gut was used, and two strands were used for the nerve and for each tendon. The hand was placed in the semiflexed position, and a dorsal splint applied. On the third day after the operation, sensation had returned to the fingers, and at the end of a week she could flex her fingers and thumb, although the action was feeble. At this date ($6\frac{1}{2}$ weeks after the accident), the sensation was nearly perfect, and the movement of the tendons in the forearm could be seen and felt. The action was still very weak, so that while she could move the fingers freely, if unopposed, she could not overcome even the lightest pressure made upon the fingers. As, however, it was only five days since the splint was removed, and during that time considerable improvement had taken place, it was hoped that the result

would, in time, be very good. Mr. Clark pointed out that packing the wound was, in such cases, most injurious, and seriously diminished the chance of obtaining a good result from suture. He also pointed out that, in such cases, the return of sensation took place within three days of the suture, while the conduction of motor impulses was not re-established till much later. The result appears to him to confirm the opinions he had expressed in a communication on the subject of "Primary Nerve Suture," presented to the Society some years ago.

II.—CASE OF SECONDARY SUTURE OF THE ULNAR NERVE PERFORMED EIGHT MONTHS AFTER ITS DIVISION.

By JOHN BARLOW, M.D., F.R.C.S.

A. B., aged 14 years, was admitted into the Glasgow Royal Infirmary, on 24th October, 1888, complaining of loss of power in right arm.

Eight months ago he was injured by a circular saw upon the inner side of the upper arm, 3 inches above the internal condyle, and since that time has complained of weakness in the forearm and hand. Examination shows a well marked cicatrix, mainly horizontal in direction, and about 2 inches in length. Above and below the cicatrix the ulnar nerve can be made out with enlarged and bulbous ends. Pressure upon the upper end produces a sensation of tingling, which is referred to inner aspect of the hand. The muscles of the right forearm and hand in general are atrophied, and there is marked atrophy of the interossei muscles and muscles of the ball of the little finger. The first phalanges of the fingers are extended, and the second and distal are flexed. Forcible extension is prevented by bands on flexor surface. There is no power of abduction or adduction of fingers, and the interossei muscles give no response to the galvanic or faradic currents applied directly or over motor points.

Sensation normal on dorsal and palmar aspects of hand, except over little finger and ulnar border of ring finger, back and front, where there is absence of touch and pain sensations.

The skin covering these parts has an appearance similar to to that of venous congestion.

Although the condition of the muscles did not offer much encouragement to operate, the boy's father was anxious that an attempt should be made to improve matters, and on 27th October I cut down upon the seat of injury, found the enlarged and bulbous ends, which were separated from each other by a

distance of an inch, dissected up what seemed like a layer of cicatricial tissue between and connecting the ends, and then with the knife cut through each nerve at about the centre of the enlargement. The forearm was then extended, and the ends of the nerve brought in contact by means of four catgut sutures. The edges of the skin wound were brought together, and the usual dressings were applied. A splint was applied to keep the forearm extended. On the 31st October it was noted that the sensation of pain could be produced on dorsal and palmar surfaces of little and ring fingers, and the boy could then separate and approximate the fingers slightly. The localisation of the pain sensation was imperfect.

9th November.—Upon this date a splint was applied to the forearm and hand, to prevent flexion at wrist, but leaving the interosseous spaces free. The continuous current was ordered to the interossei muscles. From last note there has been a gradual improvement in power of motion, but power of correctly localising sensation is not yet perfect.

On the 20th the patient left the hospital, but was ordered to attend at the battery room for the galvanic current.

At the present time, a year after operation, sensation is perfect, and the fingers can be approximated and separated, but the fingers and hand cannot be completely extended upon the forearm. This seems to arise from a condition of contraction in the deep flexor of fingers. There is comparative atrophy of interossei muscles, and there is tenderness over the ulnar nerve.

I think an improvement in the boy's condition may be fairly claimed, as the boy finds that his limb is of much more service to him, and he can follow his employment; but, as may be supposed, I should prefer better results, which might have occurred had it been possible to remove entirely the bulbous ends before suturing, so as to connect healthy nerve structures. But, in my opinion, with which Mr. Clark, who assisted me at the operation, agreed, to have done this, would have made it difficult, if not impossible, to bring the ends in contact.

There is yet a ground for hope that further improvement will take place in the power of the limb, but with a young patient it is difficult to ensure the systematic exercise of individual muscles, which is necessary for removal of both atrophy and contracture.

Mr. Maylard said that unfortunately he had missed much that Dr. Barlow had said regarding the case; but the amount of wasting which existed, associated with the marked difference in size of the hands and the old contracted state of the fingers, together with the bluish, congested appearance of the skin,

seemed to suggest the possibility of some early paralysis, due possibly to infantile paralysis.

Dr. Dalziel could not agree with the theory of infantile paralysis as being the cause of the atrophy, and was inclined to concur with Dr. Barlow as to the separation of the ulnar nerve being sufficient to account for the atrophy of both muscles and bone, assisted by the complete disuse of the arm for such a lengthened period.

The President congratulated Drs. Clark and Barlow on the successful results of the operations which they had performed for nerve suture, and entirely concurred in the views which Drs. Barlow and Dalziel had expressed regarding the cause of the atrophy.

III.—CASE OF CONGENITAL DISLOCATION OF THE HIPS.

By Mr. H. E. CLARK. (See page 102.)

MEETING VI.—10TH JANUARY, 1890.
PATHOLOGICAL SECTION.

MR. HENRY E. CLARK *in the Chair.*

I.—A CASE OF FISSURE OF THE ABDOMEN, ECTOPIA OF THE VISCERA, AND EXTROVERSION OF THE BLADDER.

By JOSEPH COATS, M.D.

Dr. Coats' paper on the above case will appear in our next number.

II.—KARYOKINESIS.

By DR. C. FRED. POLLOCK.

Dr. C. Fred. Pollock showed a series of beautiful microscopical preparations of corneal epithelium, illustrating karyokinesis (spirem, aster, equatorial plate, pithode, diaster, dispirem, and other forms).   The specimens had been obtained from the newt and tadpole.

Dr. Workman, when examining some sections from follicular conjunctivitis for micro-organisms, found among the epithelial cells of the conjunctiva some nucleii, showing very well the process of karyokinesis.   The sections given him by Dr. Thomas Reid had been preserved in alcohol, and Dr. Workman

had stained them according to Grams' method, and examined them with Zeiss' $\frac{1}{15}$ oil immersion objective.

Dr. Joseph Coats said that he had no doubt the process of karyokinesis was of as frequent occurrence in pathological tissues as in normal ones. There were, however, difficulties in observing it in the former. The process was a somewhat rapid one, supposed to take only half an hour altogether in the human subject. As death approaches, the process is likely to be suspended, and is not to be found very commonly at *post-mortem* examination. In tumours, or other structures removed during life, it is to be found; and Dr. Coats stated that he had found it in these. He expressed the belief that this is the essential process of cell formation in all the fixed tissues of the body.

Dr. Barlow congratulated Dr. Pollock on his complete demonstration of the various stages of karyokinesis. He confessed that for some time after Fleming described this process of division of nuclei, he regarded the process with suspicion, and in his lectures found it difficult to arouse any interest in the minds of students. But examination of old histological preparations shows the network of the nuclei in various forms, and it must now be admitted that the nucleus in those days does not adopt the simple and direct method of division. From the point of view of the teacher of histology, this is, perhaps, to be regretted, as we are not any better able to give a cause for the changes in the nucleus.

III.—CASE OF HÆMORRHAGE INTO THE MIDDLE EAR, DUE TO FRACTURE INVOLVING POSTERIOR BORDER OF THE MASTOID PORTION.

BY MR. HENRY RUTHERFURD, M.B.

The specimen shows a fracture which, opening up the temporo-occipital suture, had at the same time detached a splinter from the lower and extreme posterior border of the mastoid portion. In doing so it had brought into communication the mastoid cells and the lateral sinus at the lower and posterior border of the sigmoid groove. The mastoid cell directly involved was quite behind the sigmoid groove; it was of the size of a small pea, and from its smooth lining and rounded shape easily distinguishable from a mere cancellus of bone. In the recent state it was full of blood, as were the uppermost cells in the mastoid process and the middle ear. The cells occupying lower or apical part of the process were free of blood.

Escape of blood into the pharynx was not observed during life, nor did it by the external auditory meatus, the membrana tympani being intact.

Thrombosis had occurred in the region of the lateral sinus and internal jugular immediately adjoining the seat of fracture.

The case is shown as illustrating an unusual variety of bleeding into the middle ear from fracture of the base. Had the circumstances of the case during life been such as to direct attention to the ear, it seems not improbable that either too much or too little importance might have been attached to the conditions found. The presence of blood in the tympanic cavity might have been taken as indicating—(1), fracture directly involving that region: or (2), from its smallness in amount as due merely to concussion. (*V.* Von Bergmann, Kopfverletzungen, and Schwartze, *Chirurg. Krankh. des Ohres.*)

According to Burnett the mastoid cells extend "as far backward as the emissarium mastoideum, where they are in close contact with the groove for the lateral sinus." In the present case the cell involved is distinctly behind the groove. The subject of the injury was a man rather over middle age. Beyond a moderate degree of atheroma there were no obvious senile changes.

IV.—CASE OF ABSCESS OF THE LIVER.
By John Lindsay Steven, M.D.

Dr. Steven presented the specimen, which showed several very large abscess cavities, as well as very numerous smaller ones. The specimen was obtained from a girl, aged 18, who had suffered from an intense purulent pelvic peritonitis, the result of salpingitis. The peritonitis had been the source of infection of the liver, and the peculiar thing in the case was, that no definite symptoms had been complained of during life to direct attention to the pelvis. Details of case still to be published.

Dr. J. F. Sutherland—With reference to the cause of the large multiple abscess, as found in the liver shown by Dr. Steven, it is, as suggested by him, probable that the septic mischief reached the portal veins from the uterus and right Fallopian tube, which on *sectio* were found to be unhealthy. The womb, in this case, was a virgin womb. In this country, except in deaths from pyæmia, abscesses are not found in the liver except in the case of women having a history similar to the present. I have heard gynæcologists state that, in cases of

abortion, hæmorrhage, from whatever cause, even in the smallest quantities, prolonged for a considerable number of weeks, left the uterus and appendages the absorbers of septic matter, which ultimately reached the liver and induced large abscesses there.

V.—CASE OF CANCER OF THE LIVER.

By CHARLES WORKMAN, M.D.

R. T., aged 43, a carrier.

Summary of History.—Story of malaise for four weeks, then swelling appeared in right hypochondrium, painful on pressure, nodular.

During residence in hospital, four weeks in all, growth increased rapidly. Nodules could not be felt to be umbilicated.

No history of dysentery, and only the malaise of four weeks to draw attention to the alimentary tract. No jaundice. Had suffered from fever and ague. Temperate. No history of syphilis. The whole case lasted four months.

Post-mortem.—The cadaver is that of a man of middle height, greatly emaciated. The face is somewhat yellow, the rest of the skin fairly white.

On opening the thorax, the lungs are found to be non-adherent, crepitant throughout, and very black; on cutting into them they are found to be quite normal. The pericardium is non-adherent and normal, the aortic curtains are quite competent, and the other valves in sound condition. Heart weighs $10\frac{1}{4}$ oz.

On opening the abdomen, the liver is found to be enormously enlarged, both right and left lobes extending down to the level of the umbilicus.

In the liver there are great numbers of secondary nodules of cancer of very various size, and having, for the most part, an umbilicated surface. Some of these nodules are the size of a large egg. The liver weighs 140 oz.

The stomach is almost empty. In its lesser curvature, close to the pylorus, there is a tumour the size of a hen's egg, firm and hard. On opening the stomach, the tumour is found to be deeply ulcerated on its inner surface. The rest of the organ looks pale, but otherwise healthy.

The pylorus and duodenum are not at all involved in the tumour. Lying between the tumour and the pancreas there is a secondary tumour, apparently an enlarged lymphatic gland, The pancreas itself appears to be quite sound and normal in character.

The spleen is soft, weighing 5¾ ounces, of a light red colour. There are no nodules in it.

The diaphragm is almost entirely non-adherent to the liver, but at one point, corresponding to the position of one of the large nodules in that organ, there is a red swelling covered with fibrinous exudation.

Both kidneys are rather soft in consistence; the capsules strip off easily. On cutting into them they are found to be pale, and the cortex appears yellow in colour, resembling the fatty kidney.

GLASGOW PATHOLOGICAL AND CLINICAL SOCIETY.

SESSION 1889-90.

MEETING IV.—13TH JANUARY, 1890.

The President, PROFESSOR W. T. GAIRDNER, *in the Chair.*

I.—SCROFULODERMA VERRUCOSUM.

BY MR. A. E. MAYLARD.

Mr. Maylard showed a boy suffering from an extensive distribution of scrofuloderma verrucosum. The parts affected were the knuckles, the elbow, the buttocks, the knees, the malleoli—all points of pressure.

II.—CASE OF PYO-NEPHRO-LITHOTOMY.

BY J. CRAWFORD RENTON, M.D.

Dr. J. Crawford Renton read notes of a case of pyo-nephro-lithotomy, showing the calculus removed. The patient, a man æt. 30, was admitted to the Western Infirmary in August, 1889, and in the absence of Professor Buchanan he came under the care of Dr. Renton. Six years ago Dr. Buchanan had removed, by vesical lithotomy, a calculus, and until six months ago the patient had been well. He then suffered from frequent micturition, pain of a severe character in the right lumbar region, acompanied by some swelling, which increased, until three months ago he was suddenly much relieved by a discharge of pus from the bladder.

The swelling in the loin, the pus in the urine, and a certain amount of pain in the side, continued until admission. On

examination, a well marked swelling was found in the right renal region, and looking to the facts above detailed, it was evident that the patient was suffering from an abscess connected with the kidney, with probably a calculus retained in it. In this view Dr. Newman, who saw the case with me, concurred, and it was decided to operate. This was carried out, with the result that a large amount of pus was evacuated by a posterior incision, and the calculus shown removed. The calculus was embedded in the calyces of the kidney.

The patient has progressed favourably, and has gained 7 lbs. in weight since the operation, but there still continues a small quantity of pus and urine draining along the line of incision, as also into the bladder.

The question of importance is, as to whether, with a man gaining in weight, but with a discharging sinus from the kidney, it would be better to remove the kidney, and be content for the present in trying to keep the track of the sinus and the kidney itself in good order by an antiseptic solution washed into it, in the hope of the cavity closing, leaving possibly a portion of the kidney still useful.

It is unfortunate that there is no name for this operation of removing a calculus from the kidney, where an abscess is connected with it, except nephro-lithotomy, complicated with abscess.

The President thought that, in view of the risk of amyloid disease being set up by prolonged discharge, it might be best to remove the whole organ.

Dr John Lindsay Steven asked if Dr. Renton could give any opinion as to the cause of suppuration in cases of renal calculus. Only the other day he met with a case *post mortem* in which a calculus similar in shape to that shown by Dr. Renton was impacted at the beginning of the ureter, and in which hydronephrosis and cysts had formed without any suppuration whatever. In this case it was evident that the remaining renal tissue was capable of secretion, and that the hydronephrosis had been relieved from time to time by shifting of the calculus. He had met with similar cases before. He had not analysed the stone, but it was almost black in colour, and very rough and granular on the surface. Apparently the calculus, so far as known, had not given rise to striking symptoms during life; and supposing the calculus had been removed by nephro-lithotomy, the function of the organ would in large measure have been restored. In the light of such cases, and having regard to the fact that in Dr. Renton's case the discharge of pus by the urine and also by the sinus had

greatly diminished since the stone was removed, he would not be inclined to advise total removal of the kidney.

Mr. Maylard asked Dr. Renton whether he felt satisfied, at the time of the operation, that the cavity from which he removed the calculus was free from other calculi. Calculi such as that shown often existed in numbers, and not unfrequently " branches " were broken off and left in a calyx.

Dr. Joseph Coats expressed the difficulty which he had in understanding how the simple presence of a foreign body in the pelvis of the kidney should induce a suppurative pyelitis. He was not aware of any other case in which a mere mechanical irritation produced suppuration apart from the presence of microbes. It is possible that the presence of the calculus may be followed by the deposition of microbes, which may induce the suppuration.

Dr. Dalziel concurred with the views held by Drs. Coats and Steven ; and since there was every probability of the kidney being more or less useful, it seemed very undesirable to proceed at once to total extirpation, while some good might be anticipated by dilation of the probably tortuous sinus leading to the pelvis of the kidney. Much good has resulted from such procedure in sinus resulting from operations on other viscera, as, for instance, a case mentioned in Saturday's *British Medical Journal,* where immediate recovery followed the dilation of a sinus leading into the liver from an old abscess of that organ.

Dr. Newman said that Dr. Renton had asked him to see the patient previous to the operation. From the history of the case, and the physical signs presented at the examination, it appeared evident that the patient was suffering from calculous pyelitis, with the accumulation of a large quantity of pus in the pelvis of the kidney. While assisting Dr. Renton at the operation, Dr. Newman was satisfied that the entire calculus had been removed. The important question now to be considered was, should anything more be done in order to relieve the patient from the discomfort and danger of a permanent lumbar fistula ? If Dr. Renton is satisfied that the kidney on the opposite side is healthy, or has undergone compensatory hypertrophy, and that there is no amyloid disease of other organs, then the advisability of performing a nephrectomy might be considered. In such a case as the one presented to the society to-night, the probability is that the secreting tissue of the diseased organ has been completely destroyed, so that little can be gained by allowing it to remain ; while, on the other hand, the continuous purulent discharge, if large in

amount and offensive, not only renders life intolerable, but subjects the patient to the danger of amyloid disease of the other kidney. In some cases, however, by keeping a drainage tube in the sinus, and washing the wound thoroughly with an antiseptic solution, very favourable results may be attained without any further operative interference.

In reply to Dr. Lindsay Steven, Dr. Newman remarked that it was in cases of phosphatic renal calculus that suppuration of the kidney was usually met with, whereas, when the renal stone was smooth (composed of urates or uric acid), and the urine acid, the calculus caused hydronephrosis rather than suppurative pyelitis.

Dr. Renton, in reply said—I am glad that this case has caused some practical discussion, and I quite agree with those who advise delay in performing nephrectomy. Dr. Steven's remarks are most suggestive, as also Mr. Maylard's, with reference to the cause of the suppuration in renal calculus. I can only go the length of saying that some patients are more prone to suppuration than others, and therefore more susceptible to the fructification of germs. Dr. Coats has suggested the term of pyo-nephro-lithotomy for the operation performed in this case, and I have adopted it, as I think it exactly expresses what we want.

III.—CASE OF MULTIPLE TUBERCULAR NODULES IN THE BRAIN OF A CHILD AGED EIGHT MONTHS.

By John Lindsay Steven, M.D.

Dr. Steven showed the brain, and stated that he had obtained it at a private *post-mortem* which he had performed for Dr. Alex. Morton, of Crosshill. Careful clinical notes received from Dr. Morton were read, and these showed a very diverse series of nervous symptoms, which were quite in keeping with the multiple nature of the lesion revealed after death, but which were most confusing from the point of view of diagnosis. The nodules presented the usual characters of tubercular formations, and were situated in the basal ganglia and cerebellum, to the number of six or eight, generally the size of a hazel nut. The case will be published in detail at a future date.

IV.—AN INFLAMMATORY LESION IN THE KIDNEYS OF A RAM, WITH STREPTOCOCCI IN THE GLOMERULI AND TUBULES.

By Joseph Coats, M.D. (See page 108.)

V.—THE BACILLUS OF TETANUS.
By R. M. BUCHANAN, M.B.

Mr. Buchanan showed specimens and read an interesting account of the experiments that had been carried on with reference to this organism.   (See page 113.)

GLASGOW SOUTHERN MEDICAL SOCIETY.

SESSION 1889-90.

MEETING IV.—21ST NOVEMBER, 1889.

The President, ROBERT POLLOCK, M.B., *in the Chair.*

I.—CASE OF MEDIASTINAL TUMOUR PRESENTING CERTAIN OF THE FEATURES OF HODGKIN'S DISEASE.

By ALEX. NAPIER, M.D.   (See vol. xxxii, page 411.)

Dr. David Couper said this case corroborated the statement of Hilton Fagge that there was no slight relationship between rheumatism and sarcoma.   Dr. Fagge further pointed out that the rheumatic diathesis may result in sarcomatous tumours.   He had a patient, a little girl seven years of age, who had two tumours in her abdomen.   These did not resolve under treatment.   A consultant diagnosed the two tumours as really one; afterwards a growth developed in the brain, and a series of growths upon the ribs and sternum.   There was no *post-mortem*.   He thought it was a case of multiple sarcoma.   He had since had two cases of sarcoma, one in the right, and the other in the left lung, secondary to sarcoma in the lower limbs.

Dr. James K. Love said he was called in when the man died, and he was also present at the *post-mortem*.   The point which struck him was that there was no evidence of the case being one of leukæmia, neither spleen, lymphatics, nor blood being involved.

Dr. Kelly said he was interested in this case, having seen the specimen dissected.   The only evidence during life in this case of thoracic disease was valvular disease of the heart and spasmodic cough.   No evidence was obtainable by percussion as to the presence of this tumour.   He thought the glandular affection was secondary to the thoracic affection, but the difficulty in the adoption of that view was the history.

Dr. James Stirton said that the rheumatic diathesis had a great deal to do with the presence of myoma in the uterus. He would like very much to know if any connection could be traced between rheumatism and the presence of these tumours in this case.

Dr. Barras regarded the case as very singular, and was therefore quite at a loss to give an opinion at all. It struck him that there might have been some sort of phthisical history, and he would be inclined to look upon these glandular enlargements as phthisical or scrofulous. There was certainly no evidence of phthisis, but the very fact of there being so many of these glands enlarged, he thought, was evidence of a phthisical diathesis.

Dr. Gilmour presumed there was no relationship between these tumours and the nodules of erythema nodosum.

The President said Dr. Napier's case was interesting from many points of view.

Dr. Napier replied. He said the patient's history was rheumatic from his early boyhood. Further, his mother died in childbed from some rheumatic affection. All through his life he had been subject to rheumatic attacks. The most striking thing, when he saw him at first, was the cough. He examined him very carefully, and made out nothing very definite. He thought that probably there were glandular growths in his chest similar to those in the axilla. At first he named it lymphoma. Dr. Lindsay Steven thought it was a fibro-cellular growth. Dr. Coats took up the idea that it was a lymphoma, but had degenerated into a fibro-cellular condition. As to the immediate cause of death, he believed it to be due to the pressure of the growth upon the vital organs. He thought the tumour had been a very rapidly growing one.

ABSTRACTS FROM CURRENT MEDICAL LITERATURE.

NERVOUS DISEASES AND INSANITY.

By Dr. R. S. STEWART.

The Dangers of Sulfonal. By Marandon de Montyel (*Annales Médico-Psychologiques*, May and July, 1889).—In the August number of the *Journal* will be found several abstracts of articles referring to the use of sulfonal, in which it is, as a rule, highly spoken of as a reliable hypnotic, and free from undesirable after effects. M. Marandon de Montyel, of the Paris

Asylum at Ville-Evrard, speaking at the meetings of the Medico-Psychological Society, held in March and April, comes to a very unfavourable conclusion as to its utility, and sounds a warning note as to the dangers attending its use. In doses of 2 to 5 grammes, he finds that, while it leaves intact, tactile, and painful sensation, it determines in a short time a very painful feeling of intense cold, with violent shiverings, nausea, vomiting, and diarrhœa, paresis almost amounting to paralysis, vertigo, with loss of equilibration, ebriety, and stupor, or rather brutishness.

In an old man of 70, suffering from senile dementia, with acute excitement and insomnia, a dose of 4 grammes proved ineffectual, and 5 grammes equally failed to induce sleep, while its effect was such that the patient was absolutely incapable of standing up ; he swayed and staggered like a drunken man, and clutched at everything to prevent his falling ; he remarked that everything was turning round, and complained of great feebleness of legs and inability to make use of his hands, and his speech was thick. The sulfonal was dis- continued, but next evening he was no better, and only the day after did he return to his usual condition. Here the narcotic effect was *nil*, while the vertigo, intoxication, and motor troubles, acquired a very great intensity.

As the following case shows, the age of the patient was not in any way responsible for the accidents that appeared. It is that of a man of 20, suffer- ing from acute melancholia with great anxiety, numerous hallucinations, and almost complete insomnia. Two grammes produced not a single instant of repose. With 4 grammes the night after, he slept six hours consecutively. " At what a price ! " says the writer. On waking he was in a pitiable con- dition ; he had a stupid air, and did not know where he was ; he had to be dressed like an infant ; when he attempted to walk he staggered and fell ; he vomited immediately after taking a glass of milk, and again, two hours after- wards, when he had got half way through a plate of soup, and he returned to his previous condition only by the middle of the next day.

In view of the possible objection that the youth of this patient was to blame, he cites another case, that of an adult male of robust health, suffering from alcoholism and sleeplessness. Here, too, 2 grammes failed. With 4 grammes he slept, after an interval of a quarter of an hour, all night. Next morning he had to be shaken several times to awaken him, and he was found com- pletely drunk, so feeble on his legs that he fell twice while being dressed, and he had diarrhœa. All day he had to be kept walking to prevent his falling asleep, and after dinner in the evening he fell into a profound sleep and had to be carried to bed. The same difficulty was experienced next morning in waking him ; he was still stupified and was constantly sick ; he was somnolent all day, and the dynamometer, which previously registered with the right hand 76, now registered only 64. These symptoms disappeared next afternoon.

Another, and a still more painful symptom, is noted in another case, in which, after a 4-gramme dose a very intense sensation of cold, with shivering, was experienced. The dose was repeated next night, and, on the morning after, the sensation of cold had become intolerable. The patient exclaimed that he was shivering, and felt as if he were in an ice bath, a feeling which did not disappear till next afternoon.

An example is cited of another, though less frequent condition induced by the drug, a general feeling of prostration, without vertigo or loss of equili- brium, but associated with a disinclination to make the slightest effort.

A peculiarity noted in the case of a strongly built and very powerful, excited general paralytic was the resistance manifested towards the action of the drug, a resistance attributed to the robust physique. Two grammes completely failed ; four grammes, even during two nights, gave no result ; but then he became brutish and stupid and unable to stand, and it was three days before he recovered. A dose of four grammes overwhelmed a senile dement, who had to take to bed in consequence, and lost for long her aforetime voracious appetite ; and similar doses threw a maniacal imbecile of 41, in four days, into a sleep of 64 hours. Four grammes given to a paranoiac produced no sleep, but next afternoon he was seized suddenly with general feebleness, icy cold-

ness, shivering, and an overpowering desire to sleep. Inefficacy with two grammes, toxicity with four grammes ; trial was next made with three gramme doses, but with only approximately similar results. Summed up, with three or four grammes, in 21 insane, alarming symptoms were noted as regards the intellect in 20 cases, the intestinal tract in 7, motor functions in 20 cases, the stomach in 8 cases, and, finally, in 9 a feeling of intense cold. From the point of view of resistance of the organism, intoxication showed itself with four grammes; at the end of one day four times, at the end of two days six times, at the end of three and of four days two times ; with three grammes, never before the third day.

Recognising that sulfonal possesses two distinct properties—one dangerous (viz., accumulation), the other beneficial (viz., the persistence, after suppression, of the narcosis during two or even three nights)—he adopted the method of prescribing two grammes only, suspending it when seven hours' repose had been secured, and recommencing it when the sleep fell below five hours ; but out of 25 cases, 12 only were favourable, or a little less than one half ; and of the 13 unsuccessful cases, no fewer than 11 manifested symptoms of intoxication. Sulfonal, says the writer, is the most treacherous drug he knows. While some absorb it with impunity, even in very large quantity, others are profoundly affected by the smallest doses, and nothing, so far as he knows, serves to distinguish those who will tolerate it from those who will not. Further, those who seem refractory to its toxic effects, and derive benefit from its hypnotic properties, are liable from day to day, without any preliminary warning, to be gravely affected in their intellect, sensation, and motility, and in one instance life itself was imperilled by double pulmonary congestion, attributed, with apparent justice, to the drug.

Sulfonal. By Aug. Voisin (*Annales Médico-Psychologiques*, July, 1889). —This paper gives the results in seven cases treated at La Salpétriére. Four of these were cases of melancholia, the others were acute alcoholism, hysterical insanity, and apoplectic dementia, and in all of them insomnia was very prominent. The dose usually given was one gramme, and the results were entirely satisfactory. Sleep, on an average of six to nine hours, was obtained, and no bad effects were observed, even though the drug was continued for considerable periods.

Sulfonal. By Febvré (*Annales Médico-Psychologiques*, September, 1889). —M. Marandon de Montyel's cases were male patients at the Ville Evrard Asylum. M. Febvré's were cases from the female division of the same institution, and his observations are characterised by an absence of the accidents mentioned by the former. One patient took, in 34 days, a total amount of $49\frac{1}{2}$ grammes of sulfonal with benefit as regards the insomnia, but without experiencing any appreciable malaise, loss of appetite, or diarrhœa. The dose varied from 1 to $1\frac{1}{2}$ grammes. In another case $97\frac{1}{2}$ grammes, in doses of from 1 to $3\frac{1}{2}$ grammes, were taken, and vomiting and abdominal pains were only noted once. A melancholic took doses of 1 to 3 grammes for 41 days, and experienced no grave indisposition, though the sedative effects were little marked. After treatment for some time a tendency to alternations of excitement and calm was noticeable in many of the cases, the excitement recurring every two days. In two cases of excitement associated with fever, a distinct lowering of the temperature was noticeable. In the feeble and very aged, doses of one gramme have been attended with entirely satisfactory results.

Sulfonal. (*Brit. Med. Jour.*, 2nd November, 1889).—Several references to this drug occur in the discussion on recently introduced hypnotics in the last annual meeting of the British Medical Association. Among the newer soporifics, according to Leech, it ranks first as regards its potency of action, but does not equal chloral hydrate in the certainty of its effect. As regards the duration of action, he has observed a patient sleep twenty hours after 20 grains, and troublesome nervous effects may last many days after a single dose.

Prolonged deferred action is more marked after sulfonal, and is one of its chief objections. The following unpleasant effects on the nervous system have been noted ; restlessness and excitement, occasionally bewilderment, but rarely delirium ; giddiness, sometimes accompanied by staggering gait or distinct ataxia ; a sense of fatigue and depression, and sometimes hallucinations. Depressing effects on the circulation are exceptional, but cyanosis has been observed after large doses. An erythematous rash has been noted on two or three occasions. Doses of 10 to 15 grains more often fail, and it may be neces- sary to raise the dose to 20 or 30 grains. In febrile conditions it often has but little effect, and in cardiac affections and vascular degeneration it may do harm, and is often ineffectual.

Dr. Charles finds it useful in the insomnia of phthisis, Bright's disease, intercostal neuralgia, and delirium tremens. The sleep was induced slowly, but was light and refreshing, and bad after-effects appeared to result only when the dose was too small. In a girl of 16, of nervous disposition, headache, hysterical attacks, hyperæsthesia, thickness of speech, and temporary loss of power in the legs, showed themselves.

Chloralamide. By Paterson (*Lancet*, 26th October, 1889).—Dr. Paterson has tested the efficacy of this new drug in fourteen cases of insomnia. Four of these were cases of simple sleeplessness, two being over 60 years of age, and the results were very satisfactory. Similar results obtained in three cases of phthisis, and the profuse night sweats which characterised two of these was checked in a very marked fashion. Encouraging results followed its use in two cases of heart disease, and doses of 30 grains gave fair rest, eased the pain, and relieved the cough, in a man suffering from aortic aneurism. Doses of 45 and 60 grains induced sound sleep in a case of emphysema and dilated right heart, with orthopnoea, and in two cases of enteric fever, with restlessness and delirium, a very satisfactory amount of sleep was induced. In one case of Bright's disease, where insomnia was due to almost constant headache, 45 grains induced, after an interval of thirty minutes, a sleep of eight hours and a half. Insomnia and restlessness resulting from pain were little, if at all, influenced : in one case, where there was disease of the ankle with starting of the foot at night, and in another case of dysentery, with cramp-like pain, 45 grains produced sleep, which was, however, easily broken.

Certain undesirable results were noted : giddiness, feeling of sickness, dry- ness of the mouth, and even slight delirium. Its action is not so rapid as that of chloral, sleep ensuing in half an hour or an hour after administration, whereas with chloral it often results in fifteen minutes. The absence of any depressing effect on the circulation makes it an invaluable agent in cases where there is any cardiac affection. The doses recommended by the writer are from 30 to 45 grains in the case of a man, and 20 to 30 grains in the case of a woman.

Chloralamide. By Leech (*Brit. Med. Jour.*, 2nd November, 1889).— This drug is referred to by Dr. Leech in the discussion on "Recently Intro- duced Hypnotics and Analgesics" in the last annual meeting of the British Medical Association. Quotations from other observers show that 15 grains sometimes induces sleep, that after 30 grains the effect was not always prompt, and that 45 proved an effective soporific. Slight giddiness was at times noticed, and occasionally tiredness and weariness. It has no depressing effect on the circulation, and is best adapted for sleeplessness in nervous people, and in those suffering from spinal disease, bronchial asthma, subacute rheumatism, and gastric disorders unassociated with great pain.

Chloralamide as a Hypnotic. By W. Hale White (*Brit. Med. Jour.*, 14th December, 1889).—Dr. White has given this drug to twenty patients at Guy's Hospital, in all of whom insomnia was a prominent symptom, and the results were entirely satisfactory, except in two cases. These two were, a case of delirium of cerebral hæmorrhage and a case of acute rheumatism with delirium tremens and salicylic poisoning, and both died shortly after admission.

Some of the other patients were suffering from extremely painful diseases, and yet the drug produced sleep, sometimes acting better than morphia. Even after repeated doses no results that would contra-indicate its use were observed, and no depression or headache was noted. The interval preceding the onset of sleep varies from a quarter of an hour to two or three hours. In one case sleep did not ensue till next morning, and lasted all day. The successful cases comprised enteric fever, malignant disease, aneurism, nephritis, cardiac disease, ascites, erysipelas, rheumatic fever, eczema, phthisis, brachial monoplegia, and spastic paraplegia.

Classification of Mental Diseases. (*Annales Médico-Psychologiques*, September, 1889.)—At the International Congress of Mental Medicine, held in Paris in August last, the following classification was proposed and adopted to serve as a basis for international statistics :--

    1. Mania, comprising acute delirium.
    2. Melancholia.
    3. Periodic insanity (insanity of double form, &c).
    4. Progressive systematised insanity.
    5. Secondary dementia.
    6. Organic and senile dementia.
    7. General paralysis.
    8. Neurotic insanities (hysteria, epilepsy, hypochondria, &c).
    9. Toxic insanities.
   10. Moral and impulsive insanity.
   11. Idiocy.

SURGERY.

By A. E. MAYLARD, B.S. Lond.

Cases of Extirpation of the Urinary Bladder and of Total Excision of the Bladder Mucous Membrane. By Brohl (*Centralbl. für Chirurg.*, 19th October, 1889, No. 42).—The author reports four cases in which von Bardenheuer had for the first time on man performed the operation of total extirpation of the urinary bladder, and also of total excision of the bladder mucous membrane. Bardenheuer operated by his " Symphysis-Cut," which renders the bladder easily accessible. The four cases were the following :—

(1.) Patient 57 years of age. The tumour occupied the entire fundus, extending more to the left, than to the right side. For ten days after extirpation of the bladder all did well, the wound granulating. On the fourteenth day the patient died from uræmia.

(2.) A girl, 7 years old, with primary tuberculosis of the bladder. Total excision of the bladder mucous membrane. The patient recovered, but a year and a half later succumbed to general tubercular peritonitis.

(3.) A man 64 years old. The mucous membrane of the bladder was sprinkled over in its entire extent with numerous greyish-white nodules about the size of a pin's head. On the hinder wall of the bladder was a larger papillary tumour. Excision of the mucous membrane of the entire bladder, and the posterior wall in its whole thickness involved by the tumour. Several complications followed the operation, but the patient ultimately recovered with a urinary fistula.

(4.) A man 30 years old. The bladder wall had tumours upon it about the size of peas. Total excision of the mucous membrane. Recovery.

Upon the Question whether Soil exhausted by the growth of one kind of Microbe will still be suitable for the development of another kind. By J. Soyka and A. Bandler, Prag (*Centralbl.*

für Chirurgie, 2nd November, 1889, No. 44).—In these experiments the authors inoculated tubes with various kinds of microbes taken from pure cultivations of the same. The tubes were placed in the incubator and kept well shaken so as to ensure of the soil being well brought in contact with the developing microbes, and also to prevent the accumulation of decomposition products. So soon as the soil was exhausted of all products necessary for the growth of the microbe inoculated, a second species was introduced and the result noted.   The authors found that in a large number of cases, abundant development took place of the second species.   Thus, the bacillus anthracis developed upon soils exhausted by the previous growth of, respectively, the micrococcus of erysipelas, micrococcus tetragonus, pneumonia, and others.   The spirillum of Asiatic cholera also developed upon soils exhausted respectively by micrococcus tetragonus, pneumonia, &c.   The experiments showed that although a soil might be exhausted of the ingredients necessary for the development of one kind of microbe, and exhausted by the microbe itself, it nevertheless might still contain other ingredients all sufficient to supply the nourishment for the growth of some other kind of microbe.

Operations of Pylorectomy and Gastro-Enterostomy Performed in Billroth's Clinic from March, 1885, to October, 1889. By Dr. Anton Freiherr Eiselsberg (*Archiv. für Klinische Chirurgie*, vol. 93, part 4).—There were 19 cases of pylorectomy. Of these, 10 were resections for carcinoma of the pylorus, with 4 successes ; 1 was an incomplete operation, with fatal result ; 5 were for strictures of the pylorus, with 3 successes ; and 3 were partial resections for the same disease, with 1 success.

The cases of gastro-enterostomy were 11 in number, with 5 successful results and 6 deaths.   The disease in all cases except one was inoperable carcinoma, the exception being a case of extensive induration.   The fistulous communication was, in all the cases, between the stomach and the transverse colon.

A Case of Actinomycosis in Man. By J. M. Byron, M.D. (*New York Medical Journal*, 28th December, 1889).—The patient was a young man of 28, strong, and had always been healthy.   About a month before presenting himself he had chills and after-fever symptoms that had continued since.   On percussion a limited dulness was found, extending for about 4 inches square, from the fifth to the seventh rib, between the anterior and posterior axillary lines.   With other symptoms of diminished vesicular murmur, a few very fine râles, and a pleuritic friction, the author was led to diagnose lobular pneumonia and pleurisy.   Seen again two weeks later, the patient was worse; the intercostal spaces were rather prominent and œdematous.   On puncturing pus was obtained.   On hearing of an operation the patient went away for another fortnight.   In the interval he was seen by other medical men, who diagnosed the case as one of empyema.   The pus aspirated was examined microscopically, when it was found to contain millions of the fungi.   An operation was subsequently performed.   A piece of the seventh rib was extracted, and the cavity scraped and drained.   The patient did not apparently ultimately recover.   He left the country with the hope of improvement.   The author states that the pus aspirated contained very minute lumps, like grains of sand, which made him immediately think it a case of actinomycosis, or, better, a case of *peripleuritis actinomycotica*.

On Movable Kidneys. By M. le Dr. Suffier (*Arch. Générales de Médecine*, January, 1890).—The author commences his article by a reference to a series of experimental studies regarding the quantity of renal tissue necessary and sufficient for the maintenance of the " physiological equilibrium."   He finds that one-fourth of the weight of the two kidneys is sufficient for perfect excretion of urine.   From this result he concludes that no radical measure, such as nephrectomy, should be adopted unless palliative and conservative operative measures are ineffectual.   The author has had the opportunity of studying thirteen cases of the affection.   Only upon three has he found it necessary

to operate, and in these cases the operation of nephrorrhaphy was performed. In the remaining cases good results were obtained by the use of nicely fitting encircling bandages, with a pad of wool or other soft tissue in the renal region, to keep the kidney supported. As regards symptoms, the author says that in many cases there are none, and where they exist they are either of the nature of gastro-intestinal, dyspeptic, or purely renal.

On Operation for Floating Kidney and Floating Liver. By Langenbuch (*Deutsche Med. Wochensch.*, 1889, p. 325).—A girl of 19 was operated upon for nephrorrhaphy on the right side by Langenbuch, and the troublesome symptoms ceased, until she fell six months afterwards, when they re-appeared, and were supposed to be due to the kidney having become displaced afresh by the fall. Langenbuch incised through the old wound, and found the kidney perfectly fixed, but then discovered that the floating tumour was really the loosely connected right lobe of the liver. Healing took place by second intention, and the liver remained fixed. The patient subsequently married, became pregnant, and aborted at two months, and the symptoms re-appeared. Langenbuch was convinced, by examination, that the liver was floating, and recommended the use of a special abdominal support.—(*London Med. Record*, 20th December, 1889.)

The Radical Cure of Varicose Veins of the Leg by Multiple Ligation. By Charles Phelps, M.D. (*New York Medical Journal*, 28th December, 1889).—The author operates in the following way :—A catgut suture is carried by a straight needle immediately behind the vein; it is then unthreaded and withdrawn. The needle is then carried immediately in front of the vein, through the openings which it has previously made, and the end of the ligature caught up and brought back. The vein is thus subcutaneously included in the ligature, which is then tied and cut short, and, if the catgut is fine enough, the knot pushed back beneath the skin. If, however, the vein is larger, and coarser catgut has to be used, no trouble results from leaving the knot in the orifice of the wound. After the dressings have been applied, the limb should be placed upon a posterior splint, and the patient kept in bed for about ten days or two weeks, after which he should wear a roller bandage for two months. The number of ligatures necessary to be applied is a matter of absolute indifference. In one case 42 were applied upon the two legs at one time, and 16 more at a secondary operation. The author has successfully operated upon some 100 cases.

Papillomatous Urethritis. By Dr. F. M. Briggs (*Boston Medical and Surgical Journal*, 24th October, 1889).—The author reports a case which he originally thought to be one of stricture of large calibre, but later, by endoscopic examination, proved to be one of papilloma, the urethra being studded for nearly 5 inches with growths of this character. Their removal was effected by Oberländer's method performed thus :—Cotton is twisted firmly on the ends of tampon holders. Having introduced an endoscope to the seat of the growths, two tampons are passed down, one after the other, and then, pressing them together and exercising a twisting motion, the papillomata are caught and pulled off.—(*The International Journal of the Medical Sciences*, December, 1889.)

An Experimental Study of Hæmarthrosis.—Delbastaille (*Bull. de l'Acad. Roy. de Méd. de Belg.*, 1888, vol. ii) has repeated experiment made by Henriett (*Dict. de Méd. et de Chir. de Jaccoud*, article " Synoviale "), and Riedel (*Deut. Zeitschr. f. Chir.*, 1880, bd. xii). He used large dogs, and introduced into their joints varying quantities of their own or other dogs' blood, either directly by transfusion or by injection with a syringe. In some cases he produced injuries of the joints, sometimes before and sometimes after the injection. His conclusions are as follow :—

1. Even considerable quantities of blood introduced in a sound knee-joint

are wholly absorbed in three weeks, so that nothing more than some pigmenta- tion of the synovial membrane remains. Even in from five to eight days the animals could walk well.

2. If an injury is inflicted either just before or soon after the injection, the result will depend upon the nature and extent of the injury. In incomplete, non-penetrating fracture of the patella, absorption was delayed sixteen days ; bruising of the joint caused similar delay ; and after penetrating fractures, rupture of tendons, &c., the process was still more retarded. Changes in the direction of so-called " organisation " then occurred, causing limited mobility or even anchylosis.

3. Fixation of a blood-filled joint retards absorption.

4. If an aseptic foreign body, such as a piece of drainage tube, is put into the joint at the same time, absorption is hastened, probably irritation of the synovial membrane.

5. A similar effect is produced by injecting synovial fluid from another animal (ox) at the same time as the blood.—(*Centralblatt f. Chir.*, 18th May, 1889.)—D. M'P.

Ox Arteries as Drainage Tubes.—At the last annual meeting of the American Surgical Association, Dr. Stephen H. Weeks, of Portland, Me., read a paper in which he described a new form of absorbable drainage tube prepared from the arteries of animals. The arteries used are those of the ox. They are separated from their sheaths, cut into tubes 4 or 5 inches long. They are then boiled in water for about five minutes. This sterilises them and hardens their coats. Holes are next cut in their sides, and they are passed over glass rods of different sizes, according to the size of tube desired. They are now placed in corrosive sublimate solution, 1 to 100, and allowed to remain ten minutes. Then they are placed in alcohol, 95 per cent, and at the end of 24 or 48 hours the glass rods are removed, the tubes being kept in alcohol until needed. These tubes are unirritating to the tissues. They are absorbed in from five to seven days, and drain the wound perfectly.—(*Boston Med. and Surg. Journal*, 6th June, 1889.)—D. M'P.

Cocain Injection in Spastic Contraction of Joints.—Lorenz (*Wien. Klin. Wochenschr*, 1889, No. 9) states that if a syringeful of a ten per cent solution of cocain be injected into the cavity of a joint spasmodically contracted by " primary inflammation," the pain ceases immediately, and the faulty position can be corrected and apparatus applied without the slightest distress to the patient. An ordinary syringe may be used, but a special long canula is required. The same method might be of use in the correction of spasmodic talipes.—(*Centralbl. f. Chir.*, 8th June, 1889.)—D. M'P.

DISEASES OF THE EAR.

By Dr. WALKER DOWNIE.

The Use of Papain in Ear Disease.— Dr. Mackenzie Johnston has recently made some experiments with papain in chronic ear disease, and with satisfactory results. In chronic suppuration of the middle ear, when pain occurs, it is almost always due to the presence of pent-up pus. If the causes leading to the condition be not speedily removed, serious consequences may result. The difficulty of thoroughly cleansing the middle ear, and especially if the contents be of a caseous nature, is a matter of every day experience with aurists. By the digestive action of papain, such *debris* is readily dissolved and removed.

The method employed by Dr. Johnston is as follows :—Fifteen mimims of a five per cent solution of papain, in water made alkaline by the addition of bicarbonate of soda, is dropped into the meatus, and, through the perforation,

into the middle ear. After allowing it to remain for an hour, the ear is syringed with boracic lotion, and carefully dried.

This application is specially useful where there is dead bone present. So far, he has employed Finkler's papain only in his experiments. —(*Edinburgh Med. Journal*, January, 1890.)

A Method of Local Medication in Perforation Otorrhœa.— In place of employing medicated fluids in the treatment of chronic otorrhœa, Mr. Shields, in the *Practitioner*, suggests the use of " pellets." The basis is oil of theobroma, and thus they melt rapidly. The pellet is about the size of a swan-shot, and, in applying it, the patient lies on his side, with the affected ear uppermost. It is then placed into the meatus, along which it goes till it comes into contact with the membranum tympani, where it melts.— (*Practitioner*, November, 1889.)

Dangerous Middle Ear and Mastoid Inflammation following Treatment of the Naso-Pharynx.—Dr. J. L. Thompson, of Indianopolis, gives a list of cases, with details of each, where serious aural mischief followed operative treatment applied to the naso-pharynx. Amongst them may be noted a case of suppurative otitis media, excited by the use of finely powdered acetate of lead, in a case of epistaxis : a case of otitis media, with extension to the mastoid cells, following the application of strong nitrate of silver solution to the nares : otitis media following application of caustics to the nasal mucous membrane : and a case of suppurative otitis media, with total loss of right membrane, following surgical measures in naso-pharynx. The others reported were of similar origin, followed by similarly serious results. Such inflammatory complications he found to be of very frequent occurrence, although some of those who took part in the debate which followed, stated that such was not the case in their experience. He thinks that, with the object of preventing such serious consequences, operations in the nose should never be performed, nor caustics applied during acute catarrhal inflammation of the parts ; that patients should be instructed to report immediately on the first twinge of pain in the ear after an application to the nose, and that the operator should be prepared to leech, to puncture the membrane, or even to open the mastoid promptly, and as soon as such is indicated.—(*The Journal of the American Medical Association*, 21st December, 1889.)

Electrolysis in the Removal of Aural Polypi.—Gruber, of Vienna, has been experimenting with this method of late, but he finds its application so painful that he recommends it to be used only where other instruments—snare, forceps, and the like—cannot be applied. It may be employed in one of two methods :—In the first, the kathode is placed on the mastoid, while the anode is inserted as deeply as possible into the growth. In the second method, both poles being armed with needles, they are separated from 1 to 2 mm., and then both are inserted into the growth. In his experiments he employed a current from the elements of a Siemen's and Halske's battery. None of the patients bear the current more than two minutes.— (*Wiener Med. Blätter*, No. 8, 1889.)

Three Cases of Aural Polypus, in which the Neoplasm was of great size, and produced serious Constitutional Symptoms.—In the *University Medical Magazine* for July, 1889, Dr. Seiss, of Philadelphia, records three cases under above title. The first case was a female, aged 21, who had a large aural polypus springing from the tympanum, and entirely filling the external meatus. She had recently been subject to epileptiform seizures, from which she recovered after the removal of the polypus. The second patient was a man, aged 23, suffering from extreme vertigo, and complete paresis of the facial nerves. There was a large polypus filling the meatus of the ear on the affected side, the removal of which

was followed by the disappearance of the paresis. In the third case there was a large " mulberry-like" polypus projecting from the meatus. The patient, aged 21, had suffered from discharge from ear for eight years, by which he had been much reduced. On the removal of the polypus his health rapidly improved.

Pea Removed from an Ear after it had been there Thirty-two Years.—The case is reported, in the *Journal of the American Medical Association*, of a woman, aged 40 years, from whose ear a pea, which had lain in the ear for thirty-two years, was removed. She herself when about eight years of age, introduced a pea into each ear, one only of which was at the time removed. Vertigo and loss of hearing on the side which contained the pea had been complained of for years, the former disappeared, and the hearing improved distinctly on the removal of the foreign body.

Books, Pamphlets, &c., Received.

The Uses of Electrolysis in Surgery, by W. E. Steavenson, M.D. London : J. & A. Churchill. 1890.

The Pulse, by W. H. Broadbent, M.D. Illustrated with fifty-nine sphygmographic tracings. London, Paris, and New York : Cassell & Co. 1890.

Food in Health and Disease, by J. Burney Yeo, M.D. London, Paris, and New York : Cassell & Co. 1889.

Transactions of the Association of American Physicians. Fourth session, Vol. IV. Philadelphia, 1889.

Leprosy and its Prevention, as illustrated by Norwegian Experience, by Robson Roose, M.D., LL.D. London : H. K. Lewis. 1890.

The Surgical Treatment of the Common Deformities of Children, by Walter Pye, F.R.C.S. Eighty illustrations. Bristol : John Wright & Co. 1890.

The New Sydenham Society's Lexicon of Medicine and the Allied Sciences, by Henry Power, M.B., and Leonard W. Sedgwick, M.D. Sixteenth part : Lin–Mas. London : The New Sydenham Society. 1889.

Traité élémentaire d'Anatomie de l'Homme, par Ch. Debierre. Tome I : Manuel de l'Amphithéatre. Avec 393 Gravures en Noir et en Couleurs. Paris : Félix Alcan, Éditeur. 1890.

The Year-Book of Treatment for 1890. London, Paris, and New York : Cassell and Co.

Practical Guide to the Demonstration of Bacteria in Animal Tissues, by Dr. H. Kühne. Translated and edited by V. D. Harris, M.D. London : Baillière, Tindall & Cox. 1890.

The Retrospect of Medicine, edited by Jas. Braithwaite, M.D. Vol. C. July-Dec., 1889. London : Simpkin, Marshall & Co. 1890.

ORIGINAL ARTICLES.

INFLUENZA.*

By W. T. GAIRDNER, M.D., LL.D.,
Professor of Medicine in the University of Glasgow.

GENTLEMEN,—When your local Secretaries did me the honour
to request that I would make some remarks to-day upon the
topic that is in every one's mouth—this being, in their opinion,
a proper way of occupying (say) half an hour of your time at
this meeting—I at once said to them that I could not engage
to discuss the whole vast subject of epidemic influenza, but
only to advert to some, mainly local, aspects of it, and in doing
so to make myself the mouthpiece of others rather than to
proclaim any new doctrines or views of my own. Presuming,
then, on your being, in a general way, well informed already
as to those characters of influenza as an epidemic (or, as
Hirsch † well calls it, *pandemic*) disease, which have been
gathered with such care and fulness into his important
chapter on the subject, and which are further accessible to all
of you in the work of the late Sir Thomas Watson, or in the
admirable article by Dr. Parkes, in Reynolds' *System of
Medicine,* I will confine these observations within such limits
as may assist you in determining, if possible, the true signifi-

* An Address delivered at the Annual Meeting in Glasgow, on the 23rd
January, 1890, of the Glasgow and West of Scotland Branch, British
Medical Association, with numerous added documents, in evidence.

† *Handbook of Geographical and Historical Pathology*, by Dr. August
Hirsch, New Sydenham Society, vol. i, p. 7.

cance of the facts that are coming to light, even now, among ourselves, in Glasgow and the West of Scotland. My own recollections of influenza extend back a pretty long way, and possibly this is one reason why it may have occurred to your Secretaries that I was the member that ought to be asked to speak on the subject. Of one or more epidemics in the " thirties " I have, indeed, a very vague impression derived from general conversation, and perhaps from suffering more or less in one of them, as a mere school boy. In 1847-48 I had to deal with a portion of a really great epidemic, which occurred when I was acting as a resident physician in the Royal Infirm-ary of Edinburgh. This outbreak, however, came not alone, but in the wake of other and most disastrous influences affecting the health of the population ; the earliest in date being the failure of the potato crop, and the Irish famine of 1845-46, which, as most of you know, forced the hand of Sir Robert Peel, and obliged him to propose to open the ports for the free admission of foreign food-stuffs (the first step in the abolition of the Corn-laws) in December, 1845. The wide-spread occurrence of scurvy in 1846 was a consequence very directly of the failure of the potato crop, and an absolutely new fact in the experience of very many general practitioners ; and the prevalence of dysentery, perhaps also of erysipelas, and latterly of typhus and relapsing fevers in 1847, were attributed to the scarcity and high prices of many most important articles of food in the two preceding years. In November, 1847, the influenza, which had been prevailing extensively on the Continent, broke out in London, and perhaps somewhat later in Scotland ; and you may easily imagine that the joint effect of all these calamities was observed in many forms of severe and fatal disease, some of which (especially grave simultaneous inflammations of all the great serous membranes), I have elsewhere adverted to as being not only new to me at the time, but unmatched in all my later hospital experience. Of this epidemic, however, I have no notes now available, and have been accustomed in teaching to refer to the interesting and careful account of it by Dr. Peacock, as perhaps the most complete we have of any single epidemic of influenza in this country. In 1857 I witnessed a much milder, but still quite unequivocal epidemic, a brief con-temporary account of which will be found in two lectures included in a volume entitled *Clinical Medicine*, &c., published by me in 1862 ; and also in the *Edinburgh Medical Journal* for 1857-58. From that time to the present, except in my own class-room, in the ordinary course of duty, I have found no

occasion either to speak or to write about influenza. And if I have now been persuaded to do so, it has not been because of any great amount of new personal experience, but simply because the duty was laid upon me, as already stated. So far as observed hitherto, the present epidemic, which has been so widespread and fatal on the Continent, and which has been very notably present in London, and even in Edinburgh, has visited us, if at all, mildly and in a very scattered and rather un-accountable fashion. We are upon the fringe of the epidemic, rather than immersed in it. Of course, we have all of us seen cases, almost every winter, and not seldom also at other seasons, of feverish colds which we often call influenza, and which sometimes run into quasi-epidemic, and very probably more or less infectious, forms. Have we seen anything more than this upon the present occasion ? My own experience, in hospital and elsewhere, though very carefully watched, follow-ing the lines suggested by the epidemic of 1857, appeared to me not to afford a decisive answer to this question. I there-fore determined to issue circulars, which were posted just three days ago, to a number of medical friends whom I considered as fairly representative men in public and private practice, inviting them to submit to me in writing, in the briefest possible manner, such observations as I could be supposed to use, not in detail, but simply as a guide to my own mind in estimating the facts while addressing you to-day. I also placed myself in communication with Dr. Russell, at the Sanitary Office, and with Professor Grant, at the Observatory, and from each of them have received valuable, though very condensed, information. As the result of it all I now fully believe that I have myself witnessed cases that are in some measure the result of the epidemic influence ; but I am bound to admit that they have been few, and for the most part not very striking or characteristic individually, and perhaps none of them so very typical as to deserve to be cited as examples of what people are calling, naturally enough, but not over wisely, *Russian* influenza, as if it were an entirely distinct or new disease. Well, then, does that prove the negative ? Have we, or have we not, had with us the " Russian " or true influenza ? The negative of this would be, I think, a very rash conclusion, because even Russian, or Viennese, or Parisian influenza, as it has been recently observed, is not, as regards its symptoms in individual cases, an entirely distinct, or at least distinctly recognisable, disease. Take the case, in some respects analogous, in others widely different, of " Asiatic " cholera as compared with its " British," or ordinary summer

form, witnessed in isolated cases almost every year in this country. I will engage to say that between an individual case of very severe or fatal home-grown cholera, and a case, isolated from its surroundings, of the Asiatic cholera or choleraic diarrhœa, there is absolutely no distinction as yet that can be securely drawn so as to constitute a diagnosis, unless we should find in the " comma-bacillus " the inevitable and sufficient distinctive mark of the latter disease only. But give me even twenty cases in succession of choleraic disease, and I know in advance, from experience, that " Asiatic " cholera will probably prove fatal to a third, or perhaps a half of them, whereas the summer cholera of these islands will, in the case of adults at least, have a relatively insignificant mortality. The distinction, in short, arises out of the epidemic conditions, and not out of the facts of single or scattered cases. Now, influenza is not a disease which, like Asiatic cholera, is fatal in a large proportion to those attacked ; and, therefore, the distinctive element of *mortality* does not greatly help us here to grasp the problem. We are bound to admit, I think, that a very sudden and prostrating feverish cold, not fatal, and very transitory, as it may occur at any time in individuals, in Scotland, and apparently determined by exposure, is, or may be, as like an individual case of " Russian " influenza as anything can well be. Yet, in the fact of the latter being propagated over a whole Continent, and being followed easily in its progress from city to city, apparently without reference to climatic conditions, we have a distinctive peculiarity which we cannot refuse to look at, however little we may under- stand it. It is notorious, and well ascertained from the experience of centuries, that epidemic or pandemic influenza occurs and spreads almost indifferently in all climates, in almost all latitudes and longitudes, in all seasons, amid all prevailing winds or no winds, amid a variety of atmospheric conditions, in short, which make it almost impossible to suppose that these alone contain the secret of its prevalence. Under these varied and varying conditions it makes its way steadily over a wide area, so as to subdue whole populations to its influence, and even to affect very seriously the death- rate of localities through the enormous numbers attacked, although the proportion of those attacked that die, is relatively small. It is out of the question, I think, to suppose that a disease which, epidemically, behaves in this fashion, is identical with a disease which, non-epidemically and as an ordinary accompaniment of our winter and spring vicissitudes, is liable to be ever at home with us here in Scotland. Single cases of

the two may not differ greatly; but the epidemic conditions differ so much as to make it clear that we have two diseases to account for, and not one only.
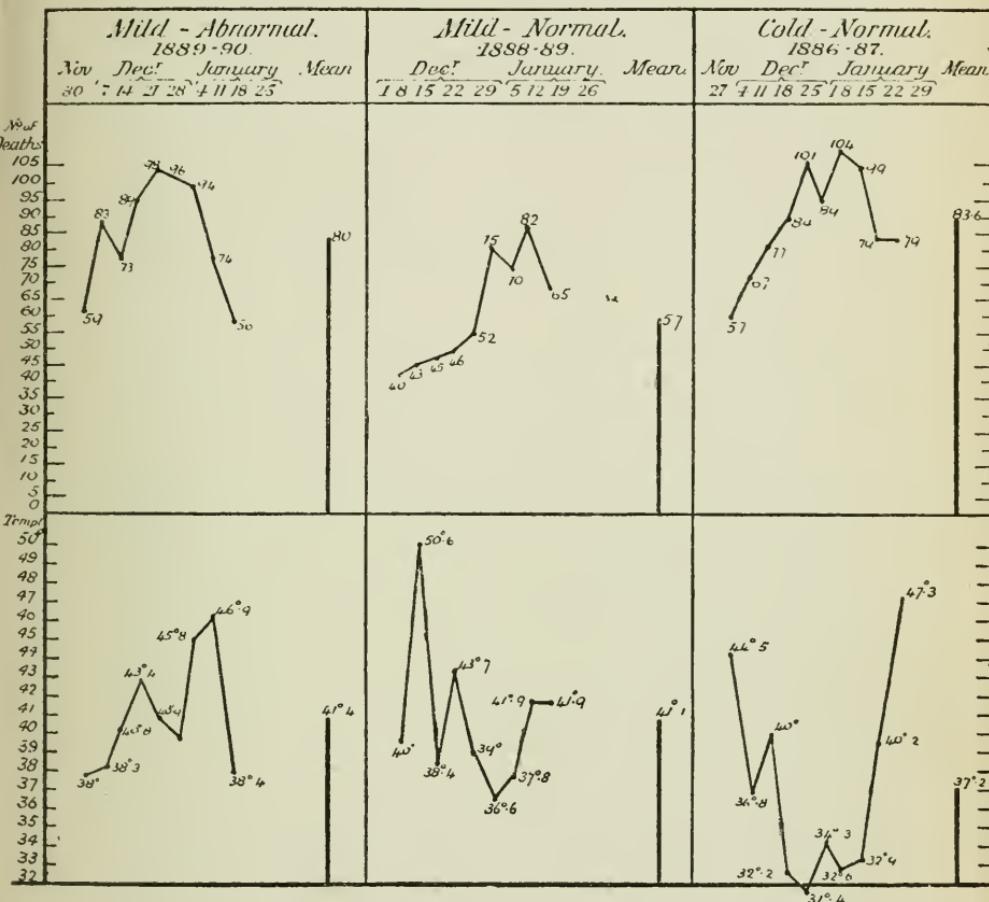
DIAGRAMS (to be read as in connection with more complete numerical details in Appendix I, p. 186) showing, in the upper spaces, the Mortality from Acute Respiratory Diseases (Bronchitis, Pneumonia, Pleurisy); and, in the lower spaces, the Mean Temperature, as registered in successive weeks of December and January in three typical seasons (as explained in the text). [It should be noted, however, that the engraver has not quite accurately succeeded in adjusting the indications of the weeks to the temperature and mortality curves, so that in the two mild seasons the figures representing the Means do not correspond with the weeks below which they are placed, although the curves of mortality and of temperature in each case correspond. A reference to the actual figures in the Appendix will be sufficient to enable any one to correct this error in detail.]

Now, in endeavouring to apply these data, which may be regarded as historically true and well-ascertained, to the present occasion, I thought it necessary to attempt a hasty

estimate of the seasonal peculiarities of the present winter (so far as it has gone), compared with one or two others in our comparatively recent experience; and to connect with this the main facts of the death-rate as bearing on the question of influenza. Dr. Russell has kindly furnished me with a diagram illustrating this as regards three recent winter seasons—viz., the present one, an exceptionally mild winter (as you all know), and in other respects (as Dr. Russell has taken pains to show) an abnormal season; next, the winter immediately preceding, also very mild, but otherwise not abnormal; lastly, the winter of 1886-87, which may be taken as a type of what is usually observed in a really cold winter season. The comparison extends over seven weeks (Dr. Russell has subsequently added another week, which brings out the facts stated even more completely).

In 1889-90 there was a rising temperature in the first three weeks of December from a mean of 38° F. to one of 43·4°. At Christmas there was a quite moderate fall of 2·5° from this exceptionally high reading of the thermometer to a mean of 40·9°, and a further fall of 0·9° in the succeeding week, giving a temperature of 40° (still a high mean temperature) for the week ending 4th January. From this point there has been a gradually rising thermometer till now, giving, in the week ending 18th January, 1890, the very high mean temperature of 46·9°, as that of the week immediately preceding the present Address. On the whole, therefore, we have had, for the season of the year, a remarkably high mean temperature, amounting for the whole seven weeks to almost 42°. The minimum reading of the seven weeks was 38°, the maximum 46·9°.

In 1888-89 (a mild, but otherwise quite ordinary season) there was a somewhat greater range of temperature in both directions than in the present winter, and greater variations in detail; but on the whole a movement downwards in December, extending into January, so far, at least, as to affect very decidedly the first half of that month, with a tendency to a rise again in the third week of the month. Mean of the whole seven weeks, slightly over 41°; minimum, 36·6°; maximum, 50·6°.

In 1886-87 (a typically cold winter) there was a much more considerable range of temperature downwards than in either of the two seasons just mentioned, the upward range of the thermometer being intermediate between the two mild seasons, 1889-90 and 1888-89. Mean of the whole seven weeks, slightly over 37°; minimum, 31·4°; maximum, 44·5°.

But by applying to my colleague, Professor Grant—whose invaluable and long continued labours at the Observatory are always willingly placed at the service of the public, and are of first-rate scientific importance as meteorological data—I find that the peculiarities of the season of 1889-90 are by no means exhausted in the above statement as to its winter temperature. For it appears that—

First, the mean temperature, both of November and December 1889, was considerably in excess of that of a series of 22 continuous years commencing 1868; the excess in November being represented by 3·1° F., in December by 2°.

Further, *Secondly*, the rainfall in these two months of 1889 was quite exceptionally small, being only from two-thirds to three-fourths of the figures representing the mean of these 22 years for the like period.

Thirdly, the humidity of the air during the two months, November and December 1889, was very notably below the average of the 22 years just mentioned—to the extent, at least, of 3 to 4 per cent.*

Now, in what has hitherto elapsed of January 1890, the mean temperature may be taken as intermediate between November and December, 1889, and 2·6° in excess of the 22 years. But, on the other hand, the rainfall and humidity of January have been greatly in excess, not only of the average of 22 years, but also of the mean of November and December 1889. With this excess of rainfall we have had, as we all know, prevailing high winds, amounting, on at least two occasions quite recently, to gales of extraordinary severity even for the winter season, the phenomena of which were carefully and scientifically recorded by Dr. Grant in the *Glasgow Herald* on each occasion, in comparison with the greatest gales of many former years.

The summary, therefore, of the meteorological conditions with which we have to deal may be expressed as follows :—A winter of quite extraordinary mildness in respect of the mean temperature, associated in November and December with a low degree of humidity and a rainfall below average, and these, generally, with a relatively still atmosphere, these latter conditions being replaced, in January 1890, by an excess of rainfall and of humidity, with repeated storms of wind, in one of which thunder and lightning of a kind extremely unusual in January occurred over a wide extent of country; the high mean temperature, however, being still maintained.

Turning now again to Dr. Russell's diagrams, already referred

* See Appendix II, p. 187, for the details here referred to.

to, we are enabled to compare the progress of these meteoro-
logical conditions with the death-rate of the city of Glasgow,
in so far as it is affected by acute pulmonary disease (*i. e.,*
bronchitis, pneumonia, pleurisy), and is recorded from week to
week by the Registrar-General. This comparison is carried
out for each of the three selected winters already referred to
as illustrating the typical phenomena of mild and of severe
winter seasons respectively. The results of this comparison
may be briefly stated as follows :—The movement of the
mortality from the acute respiratory diseases since November,
1889, to the present date, *very closely resembles that of the
exceptionally severe winter season of 1886-87, and differs
entirely, in the direction of excess, from that of last winter,
1888-89,* considered as a mild ordinary season, though, on the
whole, one with greater vicissitudes than the present—in the
month of December at least. The mortality from week to
week, in fact, during that month has exceeded by about 14 to
18—or, say, from a quarter to a third of the whole—the
corresponding weekly mortality of 1888-89, and continues still
in excess ; while the entire curve of the mortality from
respiratory diseases during the seven weeks bears a close
resemblance to that of the exceptionally cold winter of
1886-87, in which the falling thermometer in December stands
in such marked contrast with the rising temperature during
that month and January, in the present season.

Now, there is nothing that is more clearly established by
the entire past sanitary experience of Glasgow than the fact
that a sudden and great fall of temperature during December
(or, indeed, at any time in the depth of the winter), is almost
always followed, or closely accompanied, by a considerable rise
in the death-rate, especially due to the increase in respiratory
diseases ; while a relatively high temperature (contrary to the
old proverb of the " green Yule ") is usually associated with a
relatively low death-rate. In 1886-87 such a fall of tempera-
ture actually occurred in December, with exactly the usual
result, as you will see from the diagram. In 1889-90, on the
contrary, we have had a mostly rising temperature in Decem-
ber, continued into the present month (January) so far ; but
in the face of this rising temperature we have to account for
a rising mortality from pulmonary disease, and a rising general
death-rate, considerably in excess even of an average winter,
and closely resembling that of the cold winter of 1886-87. In
this respect, therefore, the present season is undoubtedly,
when studied from the point of view of the death-rate, in
association with its meteorology, a very exceptional one ; and

we may, in the meantime, be content to lay firm hold on this as a fact, whether we ascribe it to the particular epidemic influence we are in quest of, or not.

It may be said, and has been said, no doubt, that the season has been "unnaturally" mild; that an unnaturally mild season is presumably an unhealthy season, just because it is unnatural; that people have been feeling oppressed, just as if it was summer, and dismissing their overcoats and their warm clothing; that any accidental cold or wet weather occurring under these circumstances is treacherous, and tends to beget disease; in particular, that the transition from a mild, calm, and dry winter in December, to an equally mild, but stormy and wet, month of January *must* have been unhealthy, and *must* have given rise to disease in any year, without an epidemic to help it; or, conversely, that a still air, such as we have had in November and December, *must* have favoured the occurrence of fogs, and the settling down of earth-born vapours, and (in Glasgow) of chemical and other contaminations, in a high degree, and therefore *must* have given rise to an unusual amount of pulmonary and more or less epidemic disease. The misfortune for these various and contradictory theories is, that however they may fall in with this man's or that man's prepossessions, they rest upon a very slender basis, or rather upon no basis at all, of evidence. As matter of fact, we have had very few considerable fogs in Glasgow during the part of the winter that has hitherto elapsed. The winter has been a remarkably mild and open one, but otherwise free from all remarkable incidents of weather, except the transition from mild and calm, in general (in November and December), to mild and stormy in the course of the present month. And, so far as the epidemic, or "Russian," influenza is concerned, there is remarkably little to show that in its peregrinations over Europe it has been guided at all to its destination by any of these circumstances of weather, or of season, just referred to. The particular case of London, however, under an unquestionable visitation of this epidemic "influence," has brought up at least one consideration which may just possibly receive a minor illustration in Glasgow, and to which, therefore, I will, for a moment, invite your attention.

In the *St. James' Gazette* of Tuesday last (21st January), there is an interesting and plausible, if not an entirely convincing, article on "The Decline of Influenza, from a Meteorological point of View." * My attention was directed

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* It may be worth while here to place on record one or two of the statements in this well-informed, though anonymous, article in regard to

to this article by a very distinguished authority in the Medical
Department of the Local Government Board at Whitehall,
and I am not sure that its authorship may not reasonably be
supposed to proceed from that quarter. The object of the
article is to show forth a probable case (confessedly not a
proved case), to the effect that, both in London and on the
Continent, the growth of epidemic influenza has been accom-
panied and preceded by unusual stillness in the atmosphere,*
and that its decline has been coincident with, and very prob-
ably due to, the replacement of stagnation by movement.
"This would go far," writes the anonymous author, "towards
explaining the vagaries of its geographical distribution; for

the London epidemic, which were not included in my spoken Address. A
systematic inquiry on the 29th of December elicited at that time scattered
cases of influenza in different parts of London, but showed also that it
was not, apparently, present as an epidemic. On Thursday, the 2nd of
January, however, "it was evident that the epidemic was fully established
in our midst. For exactly one week it raged with constantly increasing
severity, and then began to decline. On Thursday, 9th of January, the
number of fresh cases all over London dropped significantly. The roll call
of victims was smaller, and has continued to decrease ever since. This
is a remarkably short period for epidemic influenza. In the Continental
capitals it continued to increase in severity for many weeks. At Vienna,
it first appeared in November, and did not begin to decline until much the
same time as in London. So too in Paris. It looks as if the disease had
been cut short here." The author, following in the track of all the experi-
ence gathered since 1580, concludes that "temperature has nothing to do
with the matter. The following points have been examined with negative
results: barometrical conditions, atmospheric humidity, ozone, direction
of wind, electrical conditions, and volcanic eruptions." He also, after
investigation, dismisses the rainfall as insignificant; but is disposed to
attach considerable importance to stillness in the atmosphere, as an etio-
logical factor, at least in determining the local prevalence of the epidemic.
  * "During the last four months of 1889 there was very considerable
stagnation of the air. This was first pointed out by M. Descroix, of the
Montsouris Observatory. At Greenwich the aggregate horizontal move-
ment of the air for this period was 5,846 miles below the average of the
last sixteen years. The weekly movement was 344 miles (*i. e.*, nearly 20
per cent) below the average. During the autumn quarter (last quarter of
the year) there were in 1889 only five strong gales; whereas the average
number for the last sixteen years is about eleven, and in no one of these
sixteen years were there so few as five. There was a heavy gale on the
7th October; but after that, very little. The week during which the
epidemic established itself in London was a particularly stagnant one; but
on the 5th of January there was a gale, and the wind continued to blow
strongly all that week, with another gale on the 10th. During that week
the epidemic began to abate. We have had windy weather more or less
ever since, and the influenza has continued to decline." Almost exactly
the same phenomena, according to the author, were observed in London in
1847; and there is, in his opinion, a rather strong presumption that the
Continental experience, if fully and accurately investigated, would be found
not very dissimilar.

that distribution would be commensurate with the area of stagnation, now wide and now narrow. The frequent mention, in epidemic years, of the occurrence of fogs, which, of course, imply still weather, corroborates the theory to some extent. That there have been still seasons, without the influenza, is nothing against the theory ; but an outbreak during a stormy one would knock the bottom out of it at once. For the rest, it is worth consideration, if only because it agrees with all we know about the causation of zymotic disease. Stagnant air over a populous district is dirty air, and dirt is co-ordinate with disease." To which I will only add at this stage, that if the theory holds good as respects Glasgow and the West of Scotland, we ought to be, since last week at least, experiencing the benefits of the terrific gales with which we have lately been favoured, and thus illustrating another adage, perhaps of more real value than that of the "green Yule"—viz., that "it's an ill wind that blaws naebody guid." *

I now propose to submit, though necessarily in a very condensed form, some results of individual medical experience. Before doing so, however, let me say that, as I had myself never seen a typical, and at the same time unquestionable, temperature-chart illustrating the course of a case of epidemic or pandemic influenza, and as none such have been published, so far as I know (the epidemics both of 1847 and 1857 having occurred before the use of the clinical thermometer was established), I desired to have the means of placing before you to-day what might be regarded as a perfectly independent

* *21st February.*—The week immediately following the delivery of this Address (25th January), and now included in Dr. Russell's abstract of returns in the Appendix, already shows that the epidemic influence on the death-rate is on the wane, 260 deaths from all causes, and 56 from acute respiratory diseases, being recorded, as compared with 330 and 98 as the maximum of the epidemic period. This, too, in the face of a decidedly lower mean temperature, 38·4°, as compared with 46·9° in the preceding week. This change, however, in the temperature was the commencement of a period of much colder and more inclement weather lasting till the present time, and influencing the death-rate in accordance with all the usual precedents, as will be observed when the last weekly returns of the Registrar-General (15th February) is compared with the preceding weeks and with the corresponding week of last year. Thus, in the week ending 15th February 1890, there were in Glasgow 331 deaths from all causes, as compared with 257 ; and 102 deaths from acute respiratory diseases, as compared with 55 in the corresponding week of last year ; the general death-rate being 32·5, as compared with 25·3 last year at this time, and 25, 24, and 25 for three preceding weeks. But, with all this increased mortality from climatic causes, there is now little or no talk of "Russian" influenza. The special epidemic influence recorded in this paper seems to be almost, if not entirely, at an end.

contribution from a recognised epidemic centre, representing
to the eye the normal course (as it were) of one or more select
cases, observed as nearly as may be from the beginning to the
end. Through the kindness of Dr. Bristowe and his resident
assistant at St. Thomas's Hospital, Dr. Hawkins, I am now
enabled to do this, and I hand round accordingly what I have
no doubt you will regard as some very interesting illustrations
of facts well known, indeed, to most of us from books and
verbal descriptions, but not, in the case of most of us, so
familiar in their strictly objective form, submitted (as Horace
has said) to the " faithful eyesight." You will observe in these
charts that the following characteristic facts are definitely
displayed : — (1) very sudden invasion, with temperature
rising almost at once (at all events within a few hours) to a
maximum or acmé, which in the most characteristic, because
the least complicated of them all, exceeded 105° F. ; (2) a
defervescence not quite so abrupt, but still so very precipitous
in some cases, that twenty-four hours (or a little less or more)
suffices to reduce the eminently febrile temperature of the
acmé to normal, or even markedly sub-normal ; (3) in some
cases oscillations (which in one instance now before me *
extend to 6°, and even 7·2° F. within twenty-four hours)
followed after two such repetitions by a sudden drop from
104·8° (the absolute maximum in this case having been 105·4°)
to 96° F., the whole febrile period extending over fully seven
days, and being complicated with pneumonia of the left base,
but with an uninterrupted and apparently rapid convalescence.
It might, of course, strike you that some of these sudden
changes were dominated by the remedies employed (in several
cases sod. salicylat., in some antipyrin, in one quinine); but
fortunately for our purpose, the most characteristic chart of
all (here reproduced with all its details) is absolutely free from
any such cause of disturbance, and may be taken to represent
the most uncomplicated course of pure influenza of the
epidemic kind, in a young and previously healthy subject,
without even the usual accompaniment of catarrh. This last
negative character is shown in several, even, I think, in the
majority of these charts, if one may trust the descriptive
notices attached to them, which expressly say in several that
there was " no catarrh ;" in one, only injection of the con-
junctivæ but no other catarrhal symptom ; in another, " con-

* I have here modified the verbal description as given in the Address, in
accordance with a considerable addition to the number of charts transmitted
to me after the Address was given, and now making *nine* in all. The most
characteristic of all, however, possibly is the one here engraved.

junctivæ injected, no catarrh of nose or lachrymation;" in yet another, only "slight cough." Of course these charts may perhaps be regarded as to a certain extent selected, so as to show forth the disease in its least complicated forms. They show, however, at all events very clearly, that the sudden and

Typical Case of Influenza.

London Epidemic of 1889-90.

R. B. W. (student), æt. 23.

22nd December.—Was playing whist. Quite well up to that moment; then head got hot, felt giddy and feverish; fanned himself, then felt cold; later, headache, anorexia, and aching of limbs.

23rd December.—No sleep last night; vomited once. No catarrhal symptoms. Slight dryness of throat. Severe headache. Complete anorexia. Limb pains gone. Conjunctiva and eyes normal. No signs in chest or abdomen. Tongue white, thin plastered fur, flabby, moist.

24th December.—Nearly well. Headache nearly gone. No appetite.

25th December.—Quite well.

26th December.—Discharged.

[*N. B.*—A very sudden rise of temperature to 105° F., with all the symptoms as of a very serious invasion of a specific fever.

Equally sudden defervescence, without any notable complication, either in chest or abdomen.

Temperature subnormal from fourth day.—W. T. G.]

CHART showing the course of the temperature in a perfectly typical and entirely uncomplicated case of Influenza, as observed in St. Thomas's Hospital, London, during the present epidemic. The details of the case are noted in the margin.

every way remarkable changes of temperature in this disease are not dependent upon, or even necessarily associated with the local complications, or with the catarrh as the most common of these.

Now, all this, though new to many of us as thus displayed to the eye from accurate readings of the clinical thermometer,

is quite in accordance with some of the classical descriptions of influenza in previous epidemics, when the thermometer was not in use; and I may add that my own experience, as carefully set down in 1857 for the instruction of a clinical class, was in every point identical with that of Dr. Bristowe to-day, in so far as the comparison can be pursued without thermometric details. In particular, the suddenness of the invasion and the almost equally sudden defervescence are referred to in the following terms:—" Most of the cases I have seen have been remarkable for the sharpness and suddenness of the attack, and not less so for the rapidity of the passage from a state of feverish prostration to convalescence. I have found a man with a pulse of 130 at night, and next day he has been up and about. This, of course, only happens with sound constitutions " (*Clinical Medicine*, p. 99). And after an enumeration of the leading symptoms, it is further stated that " though catarrh is frequent, and may be severe, *the disease is essentially a fever, not a catarrh.* Nay, the catarrh may be absent or insignificant; not infrequently it is so . . . even in the very cases in which you would, *à priori*, expect its occurrence " (p. 100). I will not trouble you now with the details given in illustration of this point, but they struck me very much at the time, because so many of the systematic authors, guided by nomenclature, have written about influenza as if it were a catarrhal fever only; and, indeed, mainly a catarrh, whatever else.

This negative peculiarity of some cases of the *Febris catarrhalis*** was not unknown in the older epidemics. In that of 1782, for example, Dr. Gray reports:—" In some the catarrhal symptoms were very slight or entirely wanting, the disorder in these cases being like a common fever."† And writing only the other day, from notes made at the time of the last great epidemic of 1847-48, Dr. Wilks has given prominence to the same fact. " You will observe," he writes to Dr. Sisley, " that although a synonym for influenza is ' epidemic catarrh,' the latter was by no means a constant symptom, *many of the worst cases, and especially the fatal ones, having no catarrhal symptoms whatever.*" Dr. Sisley, in publishing this communication, further emphasises its significance in reference to the present epidemic in London as follows:—" It has been thought by some physicians that the present epidemic is not one of influenza because *in a very*

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* Otherwise *Catarrhus epidemicus* or *Rheuma epidemicum* (Sauvages) ; *Catarrhus a contagio* (Cullen).

† *Annals of Influenza*, by Theophilus Thompson, M.D., &c., p. 124.

large number of cases there are no catarrhal symptoms." *
He also adverts to the pericardial inflammations noted by Dr.
Wilks in 1847 ; † to the characteristically acute pains in the
head, neck, and back, leading to a suspicion in some cases of
" some acute disease of the spinal cord or of its coverings ;" to
the pains in the joints, simulating rheumatic fever, but without
swelling ; and to the rapid defervescence. " I have known,"
he writes, " the temperature to fall six degrees Fahrenheit in
a single night," with profuse sweating. ‡

Among the numerous communications I have received on
the present occasion, there are a few which may be charac-
terised as altogether sceptical with respect to any special
epidemic influence in Glasgow of late ; and more than one
correspondent writes as if the whole " scare " arose from the
newspapers telling us so much about it. It has even been
humorously affirmed that influenza attacks only the persons
who live by salaries, and not those who are in receipt of daily
or weekly wages. No doubt there are in this, as in the case
of all other diseases which are much talked about, persons
who only fancy themselves ill of the popular complaint. But
on the other hand the phenomena of the death-rate, as I have
already shown, make it difficult to maintain fully this
sceptical attitude. There is beyond all question *something*
that is weighing unduly on the death-rate, especially of acute
respiratory diseases. What is that something ? till we have

* In a short paper just received from Professor Bäumler, of Freiburg,
reprinted from the *Münchener Medicin. Wochenschrift*, 1890, No. 2, the same
fact is clearly brought out as the result of personal observation of the
present epidemic on the Continent of Europe. " It is particularly to be
remarked," he writes, " that not a few cases run their course without any
catarrhal phenomena as regards the air passages. Sudden fever, with
abrupt rise of temperature, but for the most part without shivering, with
a range up to 40·6° (105·8° F.) and more, for several hours together,
frequently at first vomiting, sometimes diarrhœa ; pains in the limbs and
general prostration ; in the height of the fever marked injection of the
face, conjunctivæ, and mucous membrane of the throat—such is an ordinary
picture of the disease. Sometimes, even after 24 hours, a fall of the
temperature to normal, usually with sweating, so that in many cases the
disease runs its course under the aspect of a true ephemera. In other
cases catarrhal appearances present themselves from the first, often com-
mencing at the larynx, with sense of pain and a harsh barking cough, and
from this extending both upwards and downwards, sometimes with early
appearance of catarrhal pneumonia. In the cases with catarrh the fever
remains for several days or longer." All this is strikingly in accordance
with the London experience as here cited.

† See also my *Clinical Medicine*, p. 101, as regards this and other severe
and fatal forms of inflammation of the serous membranes.

‡ The *Universal Review*, 15th January, 1890, pp. 23, 24, and 32, 33.

settled that point, it will not do to merely *pooh-pooh* the influenza. It may be admitted at once that there are great, even extreme and unexpected, anomalies of distribution, and that it is extremely difficult or impossible to dovetail the facts which are now before us into any ready-made hypothesis or all-embracing theory, of the mode of diffusion of the disease.* It may also be readily admitted, I think, that we are not so much *in the midst* of an epidemic, as *upon the edge* of one, so far as Glasgow is concerned. Naturally, under these circumstances, the disease, when it affects the more affluent classes, attracts much more notice than among the poor in their own homes—*carent quia vate sacro.* It is not at all improbable that mild attacks of the disease among the less favoured classes may take place, and may run their whole course, not only without medical attendance, but without material interruption to the daily discharge of duty; and that admission to hospitals in such cases is quite exceptional, owing to the transitory character of the worst symptoms. The comparatively small prevalence of the disease in most of the public institutions, however, and in the common lodging-houses, is a curious, and even a staggering fact in some respects, in endeavouring to apply previous theories; but ought not necessarily to make us too distrustful of positive facts and statements, such as I shall now venture to submit in the most condensed form possible; and, as a rule, without giving individual names of correspondents in private practice.

1. Several of our professional brethren and friends have placed at my disposal some details of acute attacks in their own persons of what they consider to be influenza. Two of

* Dr. Bäumler, after careful observation of the mode of diffusion of the epidemic both in the town and the hospital, dismisses both the " miasmatic " and the " contagious-miasmatic " hypotheses, and considers the disease as a purely contagious one, with a very intense power of infection, and a very brief period of incubation. He has failed to observe, however, in his own limited and well-defined experience, any of those sudden explosions (" like thunder and lightning storms ") which have been so often described. The details he gives on this point are interesting, and serve to confirm an impression I have long entertained, that in many of these narratives in the past, imagination has done its work amid orally transmitted summaries of experience, not very closely watched or accurately recorded in the first instance. When the very first cases of a series, or within a limited population, are detected and carefully watched in respect of their date of outbreak, a sequential relation can be readily enough discovered; but if these are neglected, so that a considerable number of foci of disease are established, it may well appear as if a whole population is simultaneously attacked. See an article by Dr. R. S. Thomson, in the present (March, 1890) number of the *Glasgow Medical Journal*, as bearing on the hypothesis of contagion, supposed to apply to his own case.

these, in particular, are probably known to every member of
the Glasgow and West of Scotland Branch, the one as a
physician, the other as a surgeon of distinction. The latter
informed me that the most surprising point to him, as regards
his own case, was the extremely rapid recovery, after a degree
of prostration very unusual with him in catarrh; which, he
says, he has suffered many times before, but that " a really bad
cold usually lasts him three weeks," whereas the present one,
worse while it lasted, was over in less than three days. Of
course, there were in this case no complications, and the
subject of it is in robust health and in the prime of life. In
the case of the physician, it is perhaps sufficient to indicate
that the symptoms were of the kind usually described, and
that he himself now admits freely that they carry the implica-
tion of a peculiar, and not an ordinary, catarrh.* Another
gentleman, after visiting " six unmistakable cases of influenza
during the first two weeks of January," was himself attacked
upon the 12th, in the form of extreme nausea, coming on first
at night, and aggravated in the morning on his rising to keep
an appointment by train. This he found it impossible to do,
but after a few hours more was able to go through with a long
day's work. On the evening of this day (13th) all the typical
symptoms developed in the usual way, and were met at once
by successive doses of antipyrin and quinine until the 16th,
up to which time there had been no catarrh, unless a peculiar
feeling in the right nostril. This, however, was the premoni-
tion of a pretty severe attack, ending in bronchitis, with
severe neuralgic pains in the face, extreme weakness, profuse
perspiration at night, and distressing nausea.

(This gentleman has since quite recovered, and he declares
that his own case was exactly the counterpart of those he had
previously visited).

2. In another instance, a practitioner of experience in
general practice, but who has relations also with a special
department in one of our great establishments, had " seen
in all some ten cases of influenza, from the 5th January
onwards," when he himself was attacked on the 11th, and

* The following is a *verbatim* account of the facts, as furnished by this
gentleman in a brief note received since this Address was in type :—" An
ordinary 'cold in the head' or catarrh from 31st December till 6th January;
slight cough before it left. *Supposed* I was well, and went to a consulta-
tion to see a child on the south side at 4 A.M. on 8th January. Took ill
in the evening with headache and shivering feelings ; went to bed 8 P.M.
Ill for about a week (temp. 102° at highest) *without the least catarrh*.
Weak for another ten days after going out."

had to take to bed at once. The symptoms were the typical
ones, and the temperature rose to 103° for about thirty hours,
then gradually falling. Even after the fever abated there
was violent backache for several days, interfering with sleep,
from the difficulty of finding a position to ease the pain. He
adds, " I had no catarrh till after I went out on the 15th ;
since then I have had a nasal catarrh and a slight cough. The
subsequent weakness has been marked, and particularly
depressing. Loss of appetite has been a marked symptom."

3. One more of these personal narratives may be interesting,
as it is the case of a gentleman in very good West End family
practice. For about a month before his own attack (which
occurred on 16th January), he had been seeing or hearing
about cases of influenza in his own field of practice, to the
number of 15 to 20, " some of them trifling and far from
typical, while others were severe and undoubted cases of the
disease." This gentleman's attack was in every respect typical
in its suddenness of invasion, &c., and was accompanied by
nasal catarrh on the second or third day, and thereafter by
cough ending, as regards all the positive symptoms of illness,
about the seventh day of the attack. He adds, " I feel sure
that whatever caused the illness in myself, it did not arise
from cold. I did my work throughout the attack, but was
compelled to snatch every five or ten minutes I could get to
lie down in bed ; whilst beyond one hot bath, which did no
appreciable good, I did nothing in the way of treatment. My
appetite was hardly at all impaired. My back remained so
sore throughout the attack that I could with great difficulty
flex my head. Even now (22nd January, and sixth day of
the attack), flexion causes some pain."

In the remaining brief extracts I shall make from several
of the letters before me, I do not propose to keep any very
methodical order, but only to take a few as samples of the whole,
or as containing details of special importance or interest as
illustrating the subject. And to facilitate reference to the
original letters, I shall number the paragraphs in sequence to
those just quoted.

4. (*South Side Practice*).—" My brother and I have seen,
between us, probably a score of cases of illness, which we are
inclined to consider epidemic influenza. They were charac-
terised by a somewhat sudden onset, intense headache, some
backache, and a general feeling of soreness. Temperature
always considerably elevated, sometimes high. Catarrhal

symptoms not universal—present in some, in a few severe. Defervescence rapid. Convalescence often rapid, sometimes prolonged. Epidemic made its appearance about three weeks ago, now (21st January) practically gone. Coincidently an unusually large fatality from pneumonia."

5. (*South Side*).—About 30 cases, dating from 16th December, 14 of these being in three families. Temperature in one case, 105° on first visit; in all the others, 101° to 103·4°, continuing for three or four, or in one case, five days. (Symptoms described exactly as usual.) One patient, æt. 63, died on the 16th day from pneumonia of right lung, pleurisy of left, followed by diarrhœa. "The period of incubation was difficult to determine; in two cases I was able to say that it was not more than three days."

6. (*South Side*).—General indication of symptoms very like the preceding. Recognises two classes of cases. In one, the onset very sudden, marked by shivering, and in a few hours high fever (temp. 102·5°), eyes and fauces red and tender, tongue whitish and dry, considerable sore throat. Convalescence within four days. In the other class, premonitory listlessness and languor for two or three days, then shivering, with violent neuralgic headache, intolerance of light, &c.; pulse 130; temp. 104°; skin hot and dry, difficulty of swallowing, and sore throat. In this class of cases there had sometimes been attacks of sneezing for a week before the attack. Perspiration generally set in on the second day of the illness, and on the fourth or fifth the temperature fell.

7. (*Townhead, Northern and Eastern*).—About 14 cases, excluding doubtful ones. The first occurred on 23rd December, in Dennistoun, and was typical. [This correspondent, it may be remarked, was regularly reading a French medical journal, with weekly accounts of the Parisian epidemic.] Temp. 105°; in other cases, 101° to 103°. "Catarrhs were not marked. Some had slight sneezing and cough. Bronchial catarrh was present in two only. One or two had pains in the abdomen. One had diarrhœa, and a few pharyngitis. No fatalities and no grave complications." "I consider that we have the epidemic here, but in a much milder form, and not nearly so general as on the Continent."

8. (*West End*).—First cases seen on 25th December; since then, 29 cases. "The chief features have been remarkably sudden onset, temperatures between 101° and 104° F., head-

ache, pains in back and limbs ; symptoms of nasal or gastric
catarrh being insignificant. In one case, an old lady approach-
ing 80, the attack began with such suddenness that her relatives
thought she was suffering from a paralytic stroke. In the
case of a man, florid, healthy, stout, it began with a faint.
The subsequent features have been a fall in temperature, in
some cases even to 97·4°, with great muscular relaxation and
mental depression of an unusually pronounced character. This
depression, mental no less than physical, I have seen as pro-
nounced in a boy of 5 years as in the woman of approaching
80 ; and a young fellow of 25 told me he now no longer
wondered at people being tempted to suicide. It seems to me
complications have been more frequent than usual, and the
chief have been respiratory, chiefly catarrh of the air passages;
but the exact nature of the complication has depended on the
individual attacked rather than on the nature of the disease
itself. Three patients whom a full year ago I had attended
for localised pleurisy, without effusion, were threatened with
a recurrence; and two, who had peritonitis at a similar interval
of time, developed suspicious symptoms over the site of the
old attack. In none of the cases I have seen have I observed
anything suggestive of specificity."

9. (*West End*).—" During the last fortnight I have seen an
unusually large number of cases presenting the following
features :—Shivering, followed by fever, varying in tempera-
ture from 101° to 103° and 104°, which lasts for twenty-four
hours ; then perspiration, with temperature at 100° or 99° for
twenty-four hours ; and then on the third day the temperature
is normal. In some cases the above is very mild—*i. e.*, the
temperature may not reach 101° ; but along with each case
severe pain in the back and limbs, with headache, amounting
to intensity in some cases. Sometimes a good deal of catarrh
of the chest is observed, which in four cases has gone on to
consolidation. In other cases sickness has been a prominent
symptom, with diarrhœa. In all the cases a marked feature
has been the sudden onset of the attack, and the very marked
weakness which follows the subsidence of it. This weakness
lasts for a few days, and if the patient is careful to avoid cold,
no serious results have followed. In two cases pneumonia has
followed the non-attendance to the precaution of taking care
to keep indoors for four days after the attack subsided."

10. (*West End*).—This gentleman has no doubt that the
epidemic is rife in Glasgow, with symptoms of which some

indication is afforded in the following remarks:—" A distinct peculiarity which I have noticed in connection with the epidemic is, that when several members of one household have suffered, their symptoms have been almost identical; but when the forms of attack in several households are compared, there are great differences; acute frontal headache in one; in another, pains in the back and limbs; in a third, sore throat. It was evident that it was the house, and not the family relationship that had to do with the peculiarity. In one institution to which I act as medical attendant I saw six of the inmates in one day, and though they did not know of each other's illnesses, the story told in each case was almost identical. The same was noticed in a warehouse in town, where fifteen out of forty of the employees were attacked within a week or ten days."

11. This correspondent, in a widespread and miscellaneous practice, has seen about 80 cases since the beginning of January. His description of the symptoms is so like most of the preceding as not to require repetition. There were no deaths, but in two or three cases severe bronchitis or broncho-pneumonia; in one woman great orthopnœa not accounted for by the physical signs. Sleeplessness was a marked symptom. "The bulk of my cases were well in seven to ten days, but I have had several where the illness has lasted about 21 days, and the patients are just able to be out of bed; indeed, in two or three cases they have not yet been able, without the sense of shivering coming on, and compelling them to stay where they are."

The letter just quoted adverts to the recent occurrence, both in Glasgow and Edinburgh, of a "very severe and widespread epidemic of influenza or 'pink eye' in horses; for nearly a month or more prior to the outbreak of the disease in man, whole stables, holding large studs, have been down with it, as, for instance, was the case with our largest railway carriers and the Tramway Company." [This fact had not escaped the notice of Dr. Russell, the Medical Officer of Health, who had also occasion to note one or two facts of suspicion as bearing on the question of contagious propagation from animals to man. But, on inquiry, I find that in the large establishment of Messrs. Wylie & Lochhead, while there has been abundance of "pink eye," the men who have had to do with their very extensive stables have been almost exempt from disease, and certainly in no degree specially prone to the epidemic.]

12. In addition to the above, I have been favoured with about twenty-five communications, referring chiefly or entirely to private practice, in some of which the facts described are so precisely similar to those above cited, as to make it unnecessary to reproduce them here in detail. In others, the writers declare that they have seen no " Russian " influenza ; but in several cases this statement is qualified by another— viz., that the writers have had their hands full of cases of catarrh due to atmospheric causes or to exposure, in a degree unusual, or, as some say, unexampled, in their previous experience. This may be taken as the most marked contrast with what appears above as the experience of others—viz., febrile symptoms of sudden invasion, either apart from catarrh, or with catarrh as a secondary and often insignificant concomitant. In almost every instance, however, where the range of temperature observed is particularly noted, it is curious how the same limits occur—viz., $100°$ to $104°$ or $105°$, according to the severity of the attack.

13. In some of the public institutions, so far as the facts have become known to me, the disease has been either not at all or only casually observed. Neither in the Royal nor in the Western Infirmary has it assumed any considerable proportions, and in the workhouse hospitals a similar immunity has apparently existed. In the Deaf and Dumb Institution at Langside no cases have been observed. In the Royal Hospital for Sick Children no cases have become definitely known as influenza at the dispensary, nor has any case been recognised among the in-patients, although *one nurse* has been off duty from 11th January to 15th owing to a severe attack of ordinary influenza (temperature, $102·8°$). In the city police force (numbering about 1,000 men) Dr. M'Gill reports that during five or six weeks the sick list has gradually risen from 3 per cent (about its normal rate) to nearly 8 per cent about ten days ago (date of letter, 21st January), when it attained its maximum. " My cases have varied very much, from ordinary catarrhal symptoms to influenza with intense frontal headache, pains of back and limbs, loss of appetite, foul tongue, ushered in by shivering, and confining the patient for ten days or a fortnight." (Mean period off duty in nine successive cases of the latter kind reported as fit to resume duty, 9 days ; extremes, 5 to 15 days.) " I think, on looking over my book," adds Dr. M'Gill, " that I can safely say that I have had, during the month of January, about 50 cases. I have had, besides, a large accession of ordinary colds of two or

three days' duration, and bronchitis, pneumonia, and pleuritis."
Among the 1,200 or 1,400 officers of the Post Office there have
been many cases of "cold" or "influenza" of the ordinary
type; but the medical men who were in attendance have not
reported any definite epidemic of the "Russian" kind. In
only two cases has there been congestion of the lungs.
"Whatever it was, I think (adds Sir George Macleod) it is
now (23rd January) gone. I find to-day no case of even bad
cold reported at the Post Office, and we have just about the
average number off duty." At Belvidere Fever Hospital "a
father, son, and daughter were sent in as cases of 'continued
fever.' After observation they were judged to be influenza,
and removed to the ward prepared for the reception of cases
of that disease. Son and daughter had 'taches bleuâtres.'"
The only other case sent from the outside into this hospital
giving rise to a suspicion, either of influenza or of enteric
fever, was an old woman of intemperate habits, and in every
way an "unsatisfactory" case. Dr. Allan, who reports as
above on the 22nd January, notices also two cases among the
attendants which he regards as influenza; one of these being a
van-driver and the other a coalman, both of whom (especially
the former) had been in contact with a horse suffering from
"pink-eye." These five or six cases constituted the whole
experience of the epidemic at Belvidere up to 22nd January.

14. In the barracks at Maryhill, with an average strength
of 24 officers, 800 non-commissioned officers and men, 81
women, and 159 children, Dr. Leckie reports 13 cases, all
attacked between the 14th and the 21st January. The
description given leaves no doubt, I think, that these cases
were exactly in accordance with the facts as recorded above,
fairly typical cases in all respects of epidemic influenza. In
addition, Dr. Leckie considers that he himself, his wife, one
of his children, and a servant, were more slightly affected, the
illness terminating in each case in about 24 hours.

15. In the Prison, Duke Street, Dr. Sutherland reports
15 cases of influenza as having occurred in the thirty-one
days preceding the 20th January 1890, besides 22 of coryza,
which may or may not have partaken of the epidemic
influence. Of these 15 cases, 12 were well marked "with
the usual symptoms, lasting two or three days, and confining
the patients to bed. (Temperature, 101° to 103·5°.)" These 15
occurred among a population in all of 1,280, but were unequally
divided between the prisoners and their attendants. "During

the period of 31 days, 1,140 adults (460 males and 680 females)
passed through my hands in prison and resided there, on an
average, ten days.   Among these, 5 cases of ordinary influenza
occurred (3 males and 2 females).   On the other hand, among
the staff of 53 adults (28 males and 25 females), and their
families numbering 87 more—in all, 140, 10 cases occurred,
7 adults and 3 children."   In some observations appended to
the above, Dr. Sutherland indicates the excess of disease of
the characters just indicated above the average as about
25 per cent; and he adds that if all Glasgow, with its 750,000
of population, had been affected in a like degree, it would mean
the existence of 9,000 cases.   But while quite satisfied of this
excess of influenza, constituting an epidemic, he hesitates in
calling this condition " Russian," until he knows exactly what
are the symptoms that differentiate this trans-Ural from ordi-
nary influenza.   " From some sources I learn that there is really
no difference, save in exacerbation of the same symptoms."

16. Dr. Scott, of Tollcross, who, like Dr. Sutherland, ex-
periences a difficulty in differentiating home grown from
foreign influenza, records an epidemic in the Boys' Reformatory
at West Thorn, extending from the 20th December 1889, to
the end of the month.   " In this institution there are upwards
of 200 inmates, and the numbers under the disease were on—

December 20,	.	.	2	December 24,	.	.	52
,,	21,	.	. 20	,,	25,	.	. 22
,,	22,	.	. 76	,,	26,	.	. 9
,,	23,	.	. 96	,,	27,	.	. 4

The temperatures ranged from 101° to 104·5°, and the boys
complained chiefly of frontal headache and severe pains
throughout the body.   In very many cases the conjunctivæ
were injected, and in some, delirium was observed.   Signs of
resolution were noted towards the third, fourth, or fifth day,
when the liver and kidneys began to act freely.   All made a
good recovery except two, of whom one suffered from pulmon-
ary congestion, and the other from acute peritonitis."

17. In the Royal Asylum for the Insane at Gartnavel, Dr.
Yellowlees has recognised about thirty cases of varying
severity during the month of January, all of which have
ended in recovery; the attack usually passing off in three or
four days, leaving as many days of weakness, and of suscep-
tibility to other illness.   Of the thirty cases, *only three
occurred among the insane*, who are, as a rule, little sus-
ceptible to epidemic influences.   " Our experience does not

confirm the idea that influenza spreads from person to person, but contradicts it."

The symptoms were as follows :—" Sudden onset—malaise and oppression with headache, and usually with chills.   Fever follows, rising in some cases as high as 104°, and usually subsiding within thirty-six or forty hours.   With the fever, intense frontal headache, and great pain in the eyeballs, especially on moving them.   Very great muscular pains in the back and limbs.   Utter loathing of food, and often a sense of sickness, without vomiting   Above all, extreme prostration both of body and mind, out of all proportion to the duration of the illness, and lasting for some days after apparent recovery.   In a few cases, retching, griping pains, and diarrhœa occurred.   In a few, great pain in the joints.   In one or two, some bronchitis ; in one, tonsillitis.   Coryza, and the other signs of an ordinary cold, were markedly absent. The illness we have seen here is a specific and separate thing."

18. In the extracts given above, I have for the most part refrained from inserting the remarks incidentally made by several of my correspondents on treatment, chiefly because it is so abundantly evident that no sufficient basis of evidence exists for indicating a matured opinion on this point ; and, indeed, no very novel therapeutic doctrine or practice can be said to emanate from the whole series, the observers being content to reproduce suggestions and methods which have been more fully discussed elsewhere.   Antipyrin and sometimes quinine, severally or in combination ; in a few hands salicine, in others saline remedies are considered to have afforded more or less relief.   Nothing is said as to any of these substances being administered as prophylactics, in advance of the actual seizure. No measures of active depletion are recommended.   Rest in bed, liquid diet of the ordinary kind, and simple counter-irritants or warm applications to the surface, are generally considered desirable or essential.   Little is said as to the use of alcoholic stimulants, at all events in large doses.   The mortality from the disease has been altogether owing to complications, which in the opinion of some may be mostly avoided by care in the primary attack.

I have now only to thank the numerous friends who have aided me in this enquiry; and to express a hope that, however imperfect in detail, the sketch now given of what, I trust, is now an extinct visitation in this city of a far more widely-spread epidemic, may have a certain interest for the historians of the influenza of 1889-90.

Appendix I.

Dr. Russell's Abstract of Returns (Glasgow), giving for Twelve successive corresponding Weeks, in the Winters respectively of 1889-90, 1888-89, and 1886-87, the following Data, viz.:—(1) Deaths from All Causes; (2) from the Acute Infectious Diseases; (3) from Bronchitis, Pneumonia, and Pleurisy; (4) Mean Temperatures in each Week of each of the Three Seasons. (*See Description above, with Diagram*, p. 165.)

	MILD—ABNORMAL 1889-90.				MILD—NORMAL 1888-89.				COLD—NORMAL 1886-87.			
DATE.	Deaths (all Causes).	Infectious Dis. eases.	Bronchitis. Pneumonia. Pleurisy.	Mean Temp.	Deaths (all Causes).	Infectious Dis. cases.	Bronchitis. Pneumonia. Pleurisy.	Mean Temp.	Deaths (all Causes).	Infectious Dis. eases.	Bronchitis. Pneumonia. Pleurisy.	Mean Temp.
				°F.				°F.				°F.
Nov. 9	245	20	67	47	226	26	40	43	241	33	66	46·4
,, 16	232	23	75	47	185	20	43	47·7	234	37	63	42·5
,, 23	243	19	69	45·7	175	19	29	46·1	238	37	69	45
Nov. 30	229	19	59	38	200	19	40	40	254	32	57	44·5
Dec. 7	256	19	83	38·3	211	26	43	50·6	274	47	67	36·8
,, 14	270	34	73	40·8	211	15	45	38·4	269	29	77	40
,, 21	304	33	89	43·4	229	24	46	43·7	270	48	84	32·2
,, 28	296	32	98	40·9	249	31	52	39	323	33	101	31·4
Jan. 4	312	26	96	40	288	30	73	36·6	330	42	89	34·3
,, 11	330	33	94	45·8	294	35	70	37·8	353	52	104	32·6
,, 18	277	31	74	46·9	271	34	82	41·9	311	43	99	32·9
,, 25	260	34	56	38·4	255	40	65	41·9	279	39	79	40·2
…	…	…	…	…	…	…	…	…	299	51	79	47·3
Means,	282	29	80	41·4	245	28	57	41·1	296	41·6	83·6	37·2

From the Registrar-General's Weekly Returns.

The Means are calculated for the columns underneath the heavy cross-bar only, being those used for the diagrams at p. 165.—J. B, R.

Appendix II. (*See* p. 167.)

Return by Professor Grant, LL.D., from Data collected at Glasgow Observatory, showing (1) the Mean Temperature; (2) the Rainfall; (3) the Humidity, as Calculated for the Months of October, November, and December 1889, and Twenty-one Days of January 1890, compared with corresponding Periods of Twenty-two successive Seasons, 1868-89.

MEAN TEMPERATURE.

	1868-89.	1889.	Excess above Average.
October, ...	46·9	46·0	− 0·9
November, ...	41·3	44·4	+ 3·1
December, ...	38·3	40·3	+ 2·0
	1868-90.	1890.	
January, 1st to 21st, or 21 days, .	40·4	43·0	+ 2 6

RAINFALL.

	1868-89.	1889.	Excess above Average.
	Inches.	Inches.	Inches.
October, ...	3·725	3·325	− 0·400
November, ...	3·661	2·430	− 1·231
December, ...	3·645	2·988	− 0·657
	1868-90.	1890.	
January, 1st to 21st, or 21 days, .	2·835	4·586	+ 1·751

HUMIDITY (Sat. = 100).

	1868-89.	1889.	Excess above Average.
October, ...	85·3	85·3	0·0
November, ...	89·4	86·4	− 3·0
December, ...	91·6	87·5	− 4·1
	1868-90.	1890.	
January, 1st to 21st, or 21 days, .	74·4	84·0	+ 9·6

IS IT INFLUENZA? A BRIEF REFERENCE TO TWENTY SUSPICIOUS CASES.

By R. STEVENSON THOMSON, B.Sc., M.B., C.M.

The belief that we in Glasgow are still happily exempt from the epidemic which has overrun so great a part of Europe and America, and which confessedly prevails in Edinburgh, and many of the smaller towns lying about us, is still so firmly maintained by many, that perhaps I may be pardoned

for bringing a brief analysis of so small a number as twenty cases of suspected influenza under the notice of the readers of the *Glasgow Medical Journal*.

The points which I shall especially emphasise are those which have struck me as being of importance in elucidating the etiology of certain of the cases which have come under my notice. Still, I am perfectly aware that my facts are capable of bearing a different construction, and recognise the difficulty that must always attend any attempt to trace the origin of particular cases during the prevalence of any epidemic, the sources of infection being necessarily so numerous and oftentimes obscure.

The first case which came under my notice was that of my housemaid, who took ill on the evening of Saturday, 14th December 1889, with shivering, violent headache, vomiting, which lasted the whole of the following day, severe pains in the muscles of the legs and trunk, sneezing, with discharge from the eyes and nose, and great nervous prostration. I confess I did not pay much attention to the case, considering it to be one of unusually severe cold. On the 17th the patient was able to leave her bed, but felt ill and weak for about ten days after.

On Sunday, 22nd December, I was myself seized with a feeling of great depression and illness, which I attributed to an attack of toothache, from which I had suffered for some time, and for the relief of which I took some opium in the form of pill—this being a form of the drug which usually suits me very well. On the following day I was seized with vomiting, which continued throughout that day, and was of such violence that everything swallowed, even a mouthful of milk, was at once rejected by the stomach. Towards evening the vomiting ceased, but I continued to feel very ill and chilly. I remained in bed all that day; temperature not taken.

On the two following days, though feeling very ill, I continued to go out for part of the day, but on the morning of the 26th December was unable to leave bed. I had no rigor, but the chilliness became more marked, and the headache from which I had suffered during the preceding three days became almost unbearably violent, with severe pain behind the eyes and in the region of the frontal sinuses. There was no running at the eyes or discharge from the nose. Vision was somewhat indistinct, so that I found it impossible to read even large print, or to distinguish the details of pictures in one of the illustrated magazines. The throat now began to cause

uneasiness and difficulty in swallowing, though there was here more discomfort than pain. The throat secreted a large quantity of tough mucus, which caused discomfort in attempting to expectorate; there was also some laryngeal congestion and irritation, with slight cough. There was a feeling of oppression about the chest, but no difficulty in breathing.

Loss of appetite was complete at this stage, and vomiting again set in, the vomited matter consisting of thin frothy mucus, mixed with curdled milk. Thirst was considerable. Bowels constipated. The urine was scanty and high-coloured, presenting the usual febrile characters. It was not examined critically. The temperature on this evening was 103·5°, but fell to 101° F. on the following morning, and though higher on the 27th of December in the evening, it fell to normal on the 28th. The fall of temperature was accompanied by copious perspiration, sufficient to saturate the night dress and bed linen.

The nervous symptoms which accompanied the shivering and headache were slight delirium on the night of the 26th December, and severe pain in the muscles of the trunk and limbs, with very severe and sickening pain in the lower part of the lumbar region, which I can only compare to the feeling that might be experienced if some one had laid hold on the kidneys and was squeezing them pretty tightly. The pains throughout the body seemed to be confined mainly to the tendinous insertions of the muscles in the neighbourhood of the joints, but the joints themselves were comparatively free from pain. The pain in the back and limbs continued for some time (eight or ten days) after the fall of the temperature. For two nights there was almost complete sleeplessness.

During the illness prostration was extreme, and even after the fever was some days gone, I found standing an almost impossible feat. The loss of weight amounted to nearly 7 lbs.

On 27th December both my wife and a second servant showed signs of the disease. The course run was similar to that described in my own case, with the exception that there was no vomiting, and that coryza was intense in both cases. It was only now I began to suspect we were the victims of influenza, the symptoms and course corresponding exactly with those described by my friends abroad who had suffered from this disease.

On 12th January I was asked to see a gentleman, whose servant is very intimate with mine, and who had been coming about my house a good deal while these were convalescing. The symptoms and mode of onset were much like

what I had myself experienced, and I had little hesitation in pronouncing the case one of influenza. When seen by me on the second day of his illness there was a faint blush on the chest suggestive of scarlet fever, and an absence of the backache, though the pains in the limbs were very severe; but on the following day, the third of illness, the pain in the back was so severe that the patient was afraid to allow any one to approach his bed. On the fourth day the temperature fell from 102° F. to 98° F., and the symptoms disappeared gradually.

Of the other fifteen cases seen by me, all presented symptoms similar to the above, but in one case there was severe diarrhœa towards the end of the fever. Catarrh of the respiratory passages and coryza were well marked in all the cases, and in all the fever was moderately high.

The contagiousness of influenza is an assumption which has been frequently advanced, and even regarded as proved, only to be set aside again as incompatible with facts, which apparently did not lend themselves to such an interpretation. Many observations during previous epidemics have apparently supported the theory of direct contagion, and it seemed as if seclusion in hospitals, prisons, &c., acted as a protection to the inmates. On the other hand, numerous instances are on record where the most complete isolation failed to afford security against the disease.

In the present epidemic certain facts point to the probability not only of the contagiousness of the disease, but, in addition, make it highly probable that the contagion may be carried by third persons and fomites. The first to be affected with the disease in this country were the Post Office officials in London and some of those in Edinburgh. What is more likely than that these were infected by the letters passing through their hands? My own case points in the same direction. Before the outbreak in my house I had been in pretty regular receipt of Russian and German papers from my friends abroad, who were all laid down with the disease. These papers were in most cases opened by the housemaid, who was the first in the house to take ill. Some of them were used for lighting the fires, but some found their way to a shop in the district, the proprietor of which contracted the disease within a few days of receiving the ill omened gift.

The case of the gentleman I have cited would point to the possibility of a third person carrying the infection, and so far as I am aware, his was the only case of the kind in his neighbourhood at this time.

That the disease may be directly communicated from person to person is suggested by the fact that in Glasgow the first recognised cases of the disease occurred chiefly in medical men, who in all likelihood were in attendance on cases of influenza which they had failed to recognise.

Lastly, in four families I have attended with this disease, which I presume is influenza, the members became ill in *succession*.

I am, of course, well aware that there exists a mass of evidence pointing to the other conclusion, that the disease is spread through the medium of the atmosphere ; as, for example, its rapid appearance and spread in certain districts, which have led many competent observers to assume an indigenous origin for local epidemics. But against this assumption we must place the fact, that although in individual localities the spread is rapid, yet, as is exemplified in the present epidemic, the spread of the disease from one locality to another is slow, and not more rapid than human communication ; and we are aware that measles, which influenza most closely resembles in its progress, behaves in much the same manner in unprotected communities, spreading slowly from place to place, but with lightning rapidity among the inhabitants of any district not previously visited by this disease.

NOTES ON INFLUENZA.

By DONALD MACPHAIL, M.D., Whifflet.

I saw the first case that I was satisfied was influenza on the 17th December last. It was a severe one, in a middle aged woman. During the succeeding fortnight my assistant, Dr. Jenkins, and I saw several cases. After that they became numerous, and we have had under treatment nearly 400 cases.

The symptoms, of course, have varied much in *different* cases ; but they have adhered pretty closely to one type, and the following may be taken as a fairly accurate description of the great bulk of the cases we have seen. The patient, previously apparently quite well, or perhaps having felt a little chilly during the previous twelve hours, suddenly took ill with rigors, headache, and lumbar pain. One of the symptoms might precede the others a little, but most of the patients seen within a very few hours of the onset had all of them well marked. The rigors were soon succeeded by con-

siderable feverishness; the pulse became very quick, full, and soft; headache increased; muscular pains became general and severe, especially in the loins and back of the neck; and the patient became within a few hours very prostrate, sleepless, and perhaps quietly delirious. Anorexia was complete and thirst urgent. Tongue white and coated (like wash-leather), sense of taste abolished. There was little tendency to sweating. This state of matters persisted for two or three, perhaps four days, and then passed off, leaving the patient in a condition of extreme debility, apt to become giddy on standing, and very likely suffering severely from frontal headache, lumbago, sciatica, or brachialgia.

In a much smaller number of cases the onset of the severer symptoms was preceded for some days by well marked coryza, and in these cases there was apt to be dryness and soreness of the throat, with marked hoarseness. The after course of these cases was much the same as noted above, but there was a tendency for the tenderness and redness of the conjunctivæ and the lachrymation to continue for some time.

The average cases being thus generally outlined, it will save much space to give merely a summary of the symptoms met with.

Nervous System.—The amount of rigor varied much, from a mere feeling of chilliness to severe and prolonged rigor. The chilly feeling was very apt to be brought on again, even when convalescence was apparently established, by the slightest exposure. Headache has been perhaps the least variable symptom, and has usually been very severe, usually frontal, often unilateral and throbbing in character, with extreme soreness and tenderness of the eyeballs. It has been an early symptom always, and has in a few cases obstinately resisted treatment, and persisted during convalescence, sometimes becoming periodic. In most cases the slightest tap with the finger upon the temples was very painful, and there was marked tenderness to pressure in the supra-orbital nerves. In a few cases the headache was occipital, and associated with great soreness in the back of the neck and shoulders, which tended to persist after the patient was otherwise well. In some cases the pain was confined to a small space on the vertex. Giddiness on standing up was common, and often persisted as long as the general debility was well marked.

Sleeplessness was present in most cases, and a long, refreshing sleep usually marked the turning point of the disease, whether the disease was allowed to run its course or was apparently checked by treatment.

Delirium, of the quiet, talkative kind, was present in many of the more severe cases, especially in children.

In two cases, both elderly women, a curious condition, resembling coma, was observed. Called late at night to the first of the two, I found that she had been feeling very chilly during the day, and had been ordered 5 grains of antifebrin by Dr. Jenkins, which she had taken. Very shortly after taking it, she having been some time in bed, she became unconscious, and was supposed by those about her to have fainted. Within a few minutes I saw her, and found her lying apparently unconscious, with pallid face and cold skin, breathing very feebly, but with a very fair pulse. Pupils were slightly contracted, and responded very feebly to light, and there was no response to the usual tests of sensibility. When warm applications and sinapisms were applied she soon revived, and did not relapse into that condition. She complained a good deal during the night of the usual headache, sore back, &c., but without coryza or more shivering. I was naturally inclined to suspect the antifebrin as having caused this condition, but abandoned that idea from reasons that will immediately appear. The second case occurred within an hour of the first. This old woman, apparently well till then, was sitting at supper, about midnight, eating and talking heartily, when she suddenly fell from her chair to the floor, unconscious. Within ten minutes I found her in precisely the same condition as the first case, except that she seemed to feel tests of pain vaguely. She revived quickly and spontaneously, but relapsed suddenly, but was soon brought round again by hot applications. Before morning she complained of most of the usual symptoms, but without rigors or coryza. She had had no antifebrin or other drug before she took ill, and was very much relieved by the use of antifebrin next day, but had to get several doses of antipyrin during several succeeding days to control severe hemicrania. The first case got two or three doses of antifebrin during the second day, with great relief, and no bad effects. She recovered rapidly, with less debility than usual.

Marked deafness was present in a few cases, and persisted for some time. In one case it was unilateral, and associated with numbness of the whole side of the head and face. In all the cases it gradually wore off without special treatment.

The marked debility during convalescence was very often associated with restlessness and extreme nervous irritability. These were much less marked in patients who kept to their beds. *Muscular pains* and tenderness to pressure were very

marked—almost invariable across the loins, common in the
back of the neck, and in the shoulders and back of the thighs.
Pains in the joints we have not met with. A few cases in
which articular pains were complained of, in patients who
thought they were going to have influenza, had not the other
symptoms, and turned out to be cases of acute rheumatism.

Digestive System.—The " wash-leather " tongue was almost
invariably present in adults, and very frequent in children,
though some of these had tongues more like the " strawberry "
tongue of scarlatina. Many of the patients had very dry,
sore throats on the second day, in which the mucous mem-
brane was red and raw-looking, but not swollen. No affec-
tions of the glands were met with, except slight hardness and
tenderness in a few of the children. Anorexia in all cases
was complete during the acute stage, and in some persisted
for some days, though others had voracious appetites as soon
as convalescence began. Thirst was usually extreme, and
often persistent. In a few of the cases, especially among
children, there was severe sickness and vomiting early in
the disease. We have not met with diarrhœa as an initial
symptom. In the great majority of the cases there has been
a tendency to constipation during and after the disease. In a
certain number of cases, however, mostly in adults, there has
been severe diarrhœa, without much pain, about the fifth or
sixth day, in cases apparently quite convalescent.

Respiratory System.—Coryza has been seen in only a small
proportion of the cases, probably not one in ten. In some,
however, it has been very marked; with extreme suffusion of
the eyes, lachrymation, and swelling of the face. In these cases
the larynx has often been affected, and hoarseness, sometimes
approaching aphonia, has persisted for some time. These
have not generally been cases in which the general symptoms
were severe. Bronchial or pulmonary catarrh have not been
frequent. We have had some cases of pneumonia, mostly of
the lobular type, and several of pleurisy, most of them severe,
but nearly all of them sequelæ, brought on by indiscretion
on the patient's part. A notable fact to us is, that a good
many old men, subject to attacks of bronchitis or subjects
of chronic bronchitis and emphysema, have passed through
well marked attacks of influenza without any aggravation of
their familiar symptoms at the time, though several of them
have had bad attacks during convalescence, in which general
debility has been a dangerous element.

Urinary System.—During the feverish stage the urine has
been very scanty, high coloured, and loaded with urates; and

critical flow of urine has not been common. Irritability of the bladder has been very common, and, in some cases, there has been an approach to strangury. We have not systematically tested for albumen; but in a few suspicious cases we tested for it, and found none.

The Skin.—The condition of the skin has generally been what might have been expected, hot and dry during the acute stage, with a tendency to sweating, not very marked, however, afterwards.

General rash was observed in only two cases. In a young lady, with a very well marked attack, not coryzal, a faint dusky purple, very coarsely mottled rash, very like the early stage of a measles rash, except in colour, came out on the hands, forearms, face, and forehead between the second and third days, rapidly spread all over the body, persisted three days, then faded gradually, and was not followed by desquamation. The other case was of a girl, aged 9, with a slight attack, which might have passed undetected but for its association with other cases. The rash was much the same as in the other case, but was less general, being most marked on the face, hands, and lower part of the forearm, and across the loins, and was brighter in colour. Herpes of the face occurred not unfrequently about the crisis, and, in one case, a strong man, involved the greater part of his face.

In children the symptoms have usually been sudden chilliness or rigors, severe headache, feverishness, not unfrequently urgent vomiting, rapidly passing off. Subsequent debility has not been so marked as in adults, though some have been weak, languid, and pallid for some days. Complications or sequelæ have not been frequent, and there has been a notable absence of bronchitis.

The most frequent *complications* have been broncho-pneumonia or lobular pneumonia, apt to be of a typhoid type, and pleurisy, in several cases with some effusion. These could not in every case be attributed to indiscretion. Bronchitis did not occur.

Among the most common sequelæ have been headache, severe, sometimes periodic, mostly confined to the temples and forehead; sometimes unilateral, with marked tenderness to percussion, and tenderness of the supra-orbital nerves; giddiness; deafness; lumbago, sciatica, brachialgia; hoarseness in coryzal cases; in these also, conjunctivitis, of a "strumous" type; and in some cases diarrhœa.

We have had no deaths clearly attributable to influenza. One old, very dissipated man had a severe attack, and tedious

convalescence. He was back at work for one day, got very wet and very drunk, and died a few days after of double pneumonia.

The tendency to relapse has been striking, especially among those in whom the disease was apparently cut short by treatment. So long as they kept warm in bed till strength began to return, they did well; but getting up too soon, apparently even without exposure to cold, brought the rigors, headache, &c., back again almost as bad as at first. We have had several cases of patients quite recovered, and perhaps a week or two at work again, going down with second attacks.

With regard to the period of incubation we can give no figures. The cases have certainly shown a tendency to occur in batches, but at very irregular intervals; and the intervals between successive cases in the same house have varied indefinitely.

It is noteworthy that the health of the district otherwise has been exceptionally good. We have had almost no infectious diseases, and there has been a notable absence of cases of bronchitis in children, which are usually very numerous at this season.

With regard to causation, the marked chilliness and rigors have naturally led patients to attribute the disease to chills caught in various ways. The weather, till recently, was remarkably mild but very wet, and many of the patients had undoubtedly been much exposed to wettings, while engaged at very hot work in the open air. But just as many of our patients were miners who work far below ground in a very warm atmosphere. The wetness of the district has been extreme, for the surface soil is mostly very tenacious clay, and surface drainage is very indifferent in most places.

A notable point about the epidemic here is the large number of strong, healthy working men that have been attacked, and men of dissipated habits have not been in the majority. The friendly societies have not had so many men on their sick lists at one time, probably, since the cholera epidemics, and some of the works have been badly hampered by the number of men off work owing to illness.

It has been suggested that probably a severe wind storm will check an epidemic of influenza. That has not been the case here, for during our epidemic we have had two wind storms, one of them of quite exceptional severity and duration, and they certainly were not followed by any decrease in the number of cases. In fact, within the week following the severer storm, we had probably more new cases than during

any other similar period of time. Since the onset of frost, however, about ten days ago, we have had fewer new cases, though there have still been a good many.

Treatment.—At first we treated our cases with Dover's powder, but were not satisfied with the results, especially when there was vomiting. Some cases, especially those where there was vomiting, did better with 3 grain doses of calomel. Then we used salicylic acid, dissolved in liq. ammon. acetatis, with rather better results. But it was not until we began to use antipyrin and antifebrin that we were pleased with our results, but then we were so satisfied, as were the patients also, that for the most of the time our treatment has been really routine. Five grain doses of antifebrin, repeated every three or four hours, give unmistakeable relief. Sometimes one dose appears enough, and more than three are not often required. The absolute relief to the chilliness, headache, and other pains, is very striking in the great majority of cases, is permanent so long as the patient keeps warm in bed, and may be relied upon again should the symptoms recur. Possibly where the headache is the main symptom, and is very severe, 10 grain doses of antipyrin act more quickly. Certainly we have found it do best in cases where headache or other pain is present as a sequela. Antipyrin, from its greater solubility, is the more easily given to children, and the relief given to them by one or two 3 grain doses is very gratifying. Quinine we have not used much, except in cases of extreme debility following the disease, but have found it do well then. In only one of our cases did antipyrin cause us any anxiety. That was the case of a gentleman who has mitral disease, and is liable to fainting fits. He fainted several times, and had a disagreeable feeling of sinking after one or two doses, but minute doses of alcohol put that right. From antifebrin we have seen no bad effects. The severe diarrhœa which sometimes follows the disease we have always found easily checked by lead and opium pills in those cases where we thought it necessary to interfere at all. Other conditions we have treated on general principles. A note as to the use of alcohol may be interesting. Not a few of our patients have endeavoured to avert threatened attacks, or check established ones, by free, often excessive, use of alcohol. These cases we have always found turn out severe ones, apparently more liable to pulmonary complications than others, and followed by more marked debility, and altogether much less amenable to treatment. How far good wine might be useful during convalescence we cannot say ; but it is certain that we have seen spirituous

liquors do much harm. All the good that might be expected we believe we have got from the use of quinine.

In conclusion, we are forced to admit that what we have seen of influenza is at least very suggestive of specificity in these cases. The mode and suddenness of the onset, the rapid prostration of even the most robust patients, the tendency to involvement of the nervous system at all stages of the disease, and the way, in short, that the cases "breed true" to the type of a fever, almost force us to the conclusion that we have to deal with a zymotic disease.

THE EXAMINATION OF THE EYE.*

By FREELAND FERGUS, M.B.,

Ophthalmic Surgeon to the Glasgow Royal Infirmary ; Assistant Surgeon, Glasgow Eye Infirmary.

In opening our session we would impress upon your minds this, that the important part of the work is the clinic, the lecturing is only secondary. In fact, were our students better prepared for their ophthalmic studies, by a more thorough knowledge of elementary physics, then there would be little need of any set form of lectures. Our object in those few lectures will be to give you systematic instruction in the methods we employ in investigating the diseased conditions of the eye, and in an elementary way we should like to explain to you the principles on which these methods are based. But all diseases of the eye are by no means an expression of something being wrong with the physical condition of the eye, that is to say with the eye as an optical instrument. Many diseased conditions depend on its being also a physiological structure. Thus we find that it participates in many constitutional diseased conditions, that it is subject to many maladies which are of infective origin, and to others whose origin is not so well defined.

About these conditions we shall have something to say as opportunity arises, but we shall group them together so far as is possible. and enunciate the views generally held as to their pathology and treatment in the clinic. For they are more suited for that than as subjects of systematic lectures. One of our principal objects will be to teach every man the use of the ophthalmoscope, and to give him some idea of the various conditions of the fundus in health and disease. No doubt, this

* Being for the most part Lectures delivered in connection with the Royal Infirmary Clinic.

knowledge is best obtained by examining patients, and, to some extent, may be obtained by studying a series of drawings. Now, drawings of the fundus are very easily made on paper specially prepared for the purpose. Any of you can make such drawings without any very special knowledge. What is specially required is such a knowledge of physics as will enable you to use the ophthalmoscope for any eye, no matter what its refractive state, and to understand what you see. Let us say, in passing, that ophthalmology does not get in Scottish schools the attention from students which it deserves. There are a number of causes which tend to keep it rather in abeyance as a study. First and foremost of these is that it is not a compulsory subject. A student may graduate without even having seen the fundus of an eye, or for that matter of it, an ophthalmoscope. Then, again, few of our students have ever studied physics, and without an elementary knowledge of physics no great progress can be made in ophthalmology. Dutch and German students have as yet a tremendous pull over their English brethren in this matter. Moreover, in Holland, no student can pass his examination who has not had special instruction in eye diseases, and who is not prepared to pass a searching examination on this subject. The first place in which we saw a refraction ophthalmoscope used in routine practice was in Landolt's clinique. No doubt, we had seen it in one or two of our home clinics, but it was not in constant use. How we ever measured refraction cases without it in these days will ever be a mystery to us. We think the way in which it was done quite accounted for the remark which an eminent physician at that time made to us, that cylindrical glasses rarely seemed to be very successful. We somewhere heard of or read of a gentleman fitted with cylinders of such a kind that they could be made to revolve in the frames, so that every now and again he could adjust the axis to the meridian which it seemed to suit best. Such glasses, we venture to say, did not suit him at all.

All that has till now been said simply amounts to this, that a very elementary knowledge of physics is an absolute neces- sity for the student of ophthalmology. Without it he will not make much progress. It is having this knowledge which makes it more easy for a Dutch or German student to study eye diseases. We remember once finding a house surgeon in an English eye hospital, who could not use the ophthalmoscope by the indirect method. Such a man is about as useful in an eye clinic as a surgeon would be in a throat clinic who could not use the laryngoscope. Such an anomaly as this could not exist in any

of the public clinics in France or Germany. We do not adopt any definite system of examination unless it be that we carefully note the patient's appearance and the symptoms of which he complains. These should serve for a starting point in all investigations. From experience, we would say that it is quite impossible to draw up any complete and exhaustive scheme of examination. Any person who requires such a scheme is rarely a competent examiner, and, on the other hand, an expert surgeon is wholly independent of any such assistance. Yet, there are a few points which should always be noted, so far as circumstances permit. Above all, we should record when first seeing a patient his visual acuteness, and any error of refraction and convergence. There may be normal visual acuteness, with an error of refraction, which finds expression not in diminution of the power of vision, but rather in a chronic inflammation of the conjunctiva, or in some other way. It will not do when a patient comes before us with a chronic inflammation of the conjunctiva, merely to prescribe an astringent lotion, we must also examine most carefully the state of the refraction. One case alone will suffice to impress this on your memories. A student had suffered for many years from chronic inflammation of the eyes. Every now and again during the period of his studies his eyes became inflamed, and he suffered severely from pain when reading. Time after time had he had recourse to lotions, from which, no doubt, he gained some temporary relief, but only to have a fresh attack whenever he again began work. On carefully examining him, he was found to have a tolerably acute conjunctivitis affecting the conjunctiva lining the eyelids and the retro-tarsal fold. Indeed, he appeared to suffer from what is known as follicular catarrh. On testing, his vision was found to be of normal standard, and he could, for a time at least, read the smallest of Snellen's hand types at ordinary distances. To induce paralysis of the accommodation with atropine was our next step. We then tested his refraction, and found that there was more than one dioptre of astigmatism. Correcting glasses were prescribed, and his symptoms disappeared. We, therefore, are probably not far wrong, when we say that the chronic conjunctivitis was the expression of the uncorrected error of refraction.

There are certain appearances in a patient which sometimes serve to direct attention to such errors in refraction. In fact, much has been written, and possibly a great deal more remains to be learned, about the physiognomy of eye diseases. There are, for example, certain of the inflammatory conditions of the

eye which are associated with a special configuration. Thus, interstitial keratitis in children is, as a rule, found with a physiognomy strongly suggestive of inherited specific disease. We have had several opportunities of pointing out to you the pinched features, the cicatrices at the angles of the mouth, and the notched teeth, which generally accompany this disease. To such conditions we do not specially refer just now. We rather wish to point out that there are features in the configuration of many of our patients which are more or less associated with errors of refraction. The possibility of such being the case will at once occur to you if you remember that the development of the eyeball is, to some extent, modified by the development of the orbital cavity, which, in its turn again, is modified by the development of the bones of the face. Thus, a flat face is always suggestive of hypermetropia, which condition, as we shall in due course see, is associated with an eyeball in which the antero-posterior axis is too short.

On the other hand, when a patient is myopic—*i. e.*, when the antero-posterior diameter of the eyeball is too long—we generally find either a narrow face with a long antero-posterior axis of the cranium, or else a deep orbital cavity and marked prominence of the natural eminences of the face. There is another type of myopic face—viz.; in which the eyes have developed so far forward as to give to the patient the appearance of slight exophthalmos. This naturally leads to a forcing open, as it were, of the palpebral fissure by the distended eyeball. Sometimes, indeed, so strongly are the eyes pressed against the posterior surfaces of the lids that the balls are somewhat impeded in their movements. (Since writing the above we have seen a remarkable paper by Cohen of Bonn, who finds myopia often associated with a low frontal ridge— *i. e.*, with a compression of the eyeball from above.)

Before leaving this part of the subject there are two features to which we would call special attention. The first is what we may call the *astigmatic face*. Astigmatism, as we shall see in another place, depends, for the most part, on the cornea not having the same radius of curvature for all meridians; say, for example, it may be flatter in the horizontal than in the vertical meridian. Now this may, and very often does, occur without any very obvious change in the configuration. But very often there is. Thus, we may find that the chin is, as it were, pushed to one side, evidently showing that the one side of the face has grown more than the other. We have under observation at present a young lad whose face presents the following peculiarities:—When his head is held perfectly

erect, and a line is taken from the vertex to the root of the nose, and then prolonged down his face, it is found that the point of his chin is situated considerably to the left side of the line. Were we to take another line from the root of the nose to the point of his chin, we would find that the two lines, if projected on to a plain surface, would include an angle of about 10°. Moreover, in his case this configuration seems to run in the family, for his mother and sister have the same features, and they both are astigmatic.

This leads us to speak of the second feature, which we may call the *astigmatic position.* Very often astigmatic persons rotate the head a little to one side when they wish to see clearly. This is probably to bring the best meridian of their cornea into the same plane as the object at which they are looking. Often, on giving a person a book to read, he at once rotates the head a little to one side. Such patients are almost invariably astigmatic. Of course, no student will ever confuse such a rotation with one due to some surgical condition, which latter is more or less permanent.

Before finishing this part of the subject we would also mention a slight twitching of the fibres of the orbicularis muscles as indicative of *ametropia.* Such twitchings are sometimes unilateral, and chiefly, if not altogether, affect the lower eyelids. The twitchings to which we refer are very characteristic, and, if once seen, are never forgotten. Generally the eyes look painful and tender, and there is great asthenopia. Only the peripheral fibres are affected, and generally those at the inner part of the inferior eyelids.

Care is often required to distinguish such small twitchings from the slighter forms of convulsive movements affecting the whole of the lids, which ophthalmologists class under the name of *nictitatio.* Such movements are sometimes caused by ametropia. They are, however, more frequently caused by the presence of some irritant near the eye, such as a foreign body in the conjunctival sac.* At other times they are reflexes of such irritation as is caused by caries of the teeth or intestinal worms. In other cases the cause is more obscure.

We find, gentlemen, that two words have been used, of which you are not yet supposed to know the meaning—viz., asthenopia and ametropia, we will, therefore, define them here.

Asthenopia (a and $\sigma\theta\acute{\epsilon}\nu o\varsigma$) means a lack of strength. It means pain brought on by reading, causing, amongst other

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* A few drops of a 4 per cent solution of cocaine introduced into the conjunctival sac will cause nictitatio to cease, if it be due to local irritation of the eye.

things, a difficulty in reading, a want of power to read not aris-
ing from something wrong with the visual acuteness of the eye.

Ametropia (a and $\mu\acute{\epsilon}\tau\rho\text{o}\nu$) is a generic name applied to all
errors of refraction, and includes them all.

Thus, if an eye is long-sighted, or hypermetropic as you have
learned to call it in your physiological studies, it is ametropic,
and the form of the ametropia is hypermetropia. As our next
lessons will have to be taken up largely with ametropia, we
think it well to give you at this point a table of its various
forms :—

AMETROPIA.

Hypermetropia.	Myopia.	Astigmatism.	Presbyopia.
Hypermetropic.	Myopic.	Mixed.	Irregular.
Simple. Compound.	Simple. Compound.		

The above table may look a little formidable ; you need not,
however, trouble yourselves much about it just now. After
the next few lessons, we shall refer to it again, when we shall
be much disappointed if you do not find that the rough places
have been made smooth. You will observe that we include
old sight, presbyopia, as a form of ametropia. We shall explain
why we do so when we speak of this condition.

(*To be continued.*)

THE ACTION OF SOLUTIONS OF BICHLORIDE OF MERCURY UPON DIFFERENT METALS, WITH A VIEW TO TESTING THE RELATIVE VALUE OF WASTE PIPES USED FOR DRAINS, &c., IN HOSPITALS AND OTHER SUCH INSTITUTIONS.

By A. ERNEST MAYLARD, B.S.,
Surgeon to the Victoria Infirmary, Extra-Surgeon to the Royal Hospital
for Sick Children, Glasgow.

SOME three or four years ago trouble arose in connection
with the sanitary arrangements of the Glasgow Training
Home for Nurses. The drains were found out of order,
although but a comparatively short time had elapsed since
they had been overhauled. The plumbers were unable to
account for the state of the pipes, and the reason assigned
was that possibly the solutions of bichloride of mercury, which

had then come largely into use, had something to do with the conditions found. The following report was kindly sent me by Messrs. D. & R. Fulton, the plumbers :—

"104 and 106 Woodlands Road,
Glasgow, *23rd January, 1890.*

"*Training Home for Nurses, Renfrew Street.*

"Sir,—When sent for by Miss M'Alpin to examine as to cause of leakage of water under floor of bathroom, female ward, we found on examination that the lead waste piping from bath was in several places split open ; the lead trap was also found in the same condition.

"The fissures in the above piping and trap had all the appearance of being cut open with a sharp instrument.

"The dotted lines in the annexed sketch indicate the parts affected.

"In both cases the defective parts were found in close proximity to the soldered seam.

"We may state that we were surprised at finding such a condition of things, as the lead piping and trap was made up of pure sheet lead 6 lbs. to the square foot, and had only been a short time in use. We have in our experience come across lead piping of the same weight of material which has been in use for fifteen years, and have never found it to be affected in that way.—Your obt. Servants,

D. & R. Fulton."
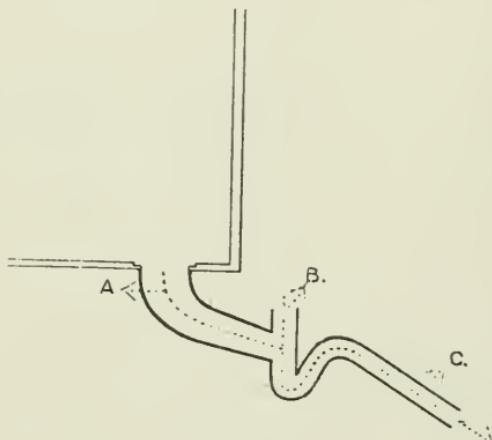
A.—Tapered Lead bend from Bath.
B.—Lead Trap.
C.—Lead Waste pipe from Trap.

It seemed a simple enough question to test this matter, and it occurred to me that it might be of value also to determine at the same time the relative effect of bichloride of mercury solutions upon the different metals used for pipes.

Pipes of metals such as are used for waste purposes were selected :—A cast-iron pipe, a copper pipe, a lead pipe, a brass pipe, and solder.

In order to insure the most positive and marked results, I used solutions of bichloride of mercury, of a strength 1 in 100, changed once a week. The pieces of pipe were placed respectively in separate receptacles and then totally immersed in the solution. This solution was poured off, and fresh added once a week for a year. Each fragment was weighed prior to its insertion, and again at the end of the year's immersion. The difference between the two weights gave the loss which the metal had sustained during its submersion. For the sake of better comparison, the loss in each case was reduced to a percentage calculation. Two series of experiments were conducted to ensure a more certain result, one from July 1887 to July 1888, and the other from October 1888 to October 1889. Before further commenting I will give the experiments :—

Experiment I (1888-89).

grammes.
Cast-iron pipe weighed . (before immersion) 97·683
(Coated with Dr. Smith's solution).
Do. . (after immersion) 71·095
Loss 26·588 grammes, *i.e.*, 27·2 per cent of its weight.

Experiment II (1888-89).

Cast-iron pipe weighed . (before immersion) 52·441
Do. . (after immersion) 41·217
Loss 11·224 grammes, *i.e.*, 20·1 per cent of its weight.

Experiment III (1887-88).

Cast-iron pipe weighed . (before immersion) 16·822
Do. . (after immersion) 11·629
Loss 5·193 grammes, *i.e.*, 30·8 per cent of its weight.

Experiment IV (1888-89).

Cast-iron pipe in pure water (before immersion) 42·237
Do. (after immersion) 41·362
Loss ·875 grammes, *i.e.*, 2·07 per cent of its weight.

Experiment V (1888-89).

Lead pipe weighed . . (before immersion) 77·076
Do. . . (after immersion) 46·708
Loss 30·368 grammes, *i.e.*, 39·2 per cent of its weight.

Experiment VI (1888-89).

oz. dr. grs.
Lead pipe weighed (before insertion of solution) 9   5   29
    Do.   (after one year)   8   3   52
Loss 1 oz. 1 dr. 37 grs., *i.e.*, 12·4 per cent of its weight.

Experiment VII (1888-89).

grammes.
Brass pipe weighed   .   .   (before immersion) 9·012
    Do.   .   .   (after immersion)   5·466
Loss 3·546 grammes, *i.e.*, 39·3 per cent of its weight.

Experiment VIII (1888-89).

Copper pipe weighed .   .   (before immersion) 16·647
    Do.   .   .   (after immersion) 13·550
Loss 3·097 grammes, *i.e.*, 18·6 per cent of its weight.

Experiment IX (1887-88).

Copper pipe weighed .   .   (before immersion) 60·651
    Do.   .   .   (after immersion) 50·771
Loss 9·880 grammes, *i.e.*, 16·2 per cent of its weight.

Experiment X (1887-88).

Solder weighed .   .   .   (before immersion) 44·082
    Do.   .   .   .   (after immersion) 43·144
Loss ·938 grammes, *i.e.*, 2·1 per cent of its weight.

Experiment XI (1887-88).

Solder weighed .   .   .   (before immersion) 32·275
    Do.   .   .   .   (after immersion) 30·572
Loss 1·703 grammes, *i.e.*, 5·6 per cent of its weight.

(In this experiment the solution was not changed, but that added at first was left for the whole year.)

In contrasting the various experiments, it will be seen that the lead and brass pipes were those most extensively attacked by the solution, each losing nearly 40 per cent of its weight. Next came the iron pipes, which lost from 20 to 30 per cent of their weight. To determine how much loss might be caused by water itself, a "control" experiment was made by placing a piece of iron pipe in pure water (see Experiment IV). It was found that the loss entailed was 2·07 per cent of its weight. It is interesting to note that in Experiments I and II, which were conducted in 1888-89, the piece of pipe coated with Smith's solution lost more than the non-coated pipe. On looking at it, it is seen how the black coating has

disappeared. It is worthy of note, also, that in Experiment III, which was conducted in 1887-8, the iron pipe lost 10 per cent more of its weight than did that in Experiment II performed in 1888-9. Could this difference of action be due to something different in the composition of the iron? Copper lost about 18 per cent of its weight, and solder, which was the least acted upon, lost only about 5 per cent.

On looking at the actual effect produced by the mercury on the metals themselves, the most observable result is seen in the lead pipes. It will have been noticed from the two experiments given—Experiments V and VI—that the lead pipe in each was treated differently. Thus, in Experiment V, the piece of pipe was immersed; whereas, in Experiment VI, the pipe was cemented to a plate of glass by means of gutta-percha, and the solution poured into its interior. That which was immersed has broken into two halves, from the solder becoming detached at the line of union, and the tube breaking by reason of its thinness. The other pipe is seen to be very deeply eroded on its inner surface, and there is also a fissure appearing at the join between the lead and the solder. It would seem that, in lead pipes, this line of juncture becomes the weakest and most likely place for leakage to occur. The iron pipes show no sign of surface erosion, but apparently become lighter from thinning. In the same way the brass and copper pipes become thinned, but not eroded. The brass pipe was so much acted upon that, on grasping it, it broke into several brittle fragments. The solder showed little or no visible change.

So far as the lead pipes are concerned, it will thus be seen that the result obtained was precisely the same as the condition found in the pipe beneath the bath, leaving no doubt, therefore, that the leakage was due to the action of the mercury on the lead at its junction with the solder. The plumber did not notice the condition of the brass stopper placed at the bend of the trap; but from the experiments, it is not unlikely that it will have been extensively acted upon.

I have no intention of going into the practical lessons which these experiments teach, save that I would venture to suggest that solutions of bichloride mercury should be thrown into the ashpit rather than carried away by the usual waste channels.

A CASE OF FISSURE OF THE ABDOMEN, ECTOPIA OF THE VISCERA, AND EXTROVERSION OF THE BLADDER.*

(*With an Illustration.*)

By JOSEPH COATS, M.D.

The specimen was sent to me by Dr. James Dunlop, of Dennistoun, who gave me the following notes as to the case :—

"Mrs. M'D., æt. 25 years, a well-formed, healthy woman, was delivered of the child on 6th November, 1889, in the seventh month of her pregnancy. The child only lived a few minutes after birth. This was her second confinement. Her first child is a strong, healthy boy, about 14 months old, and well-formed in every respect. There is no history of mal- formations in any relatives of the parents, and no known cause for the present case. The mother has had hard work in her domestic duties, and often carried her first child in her arms whilst pregnant with this second one. There is no history of fright, nor any known cause of the miscarriage at this time ; but the mother was subjected to a good deal of mental worry, and even to ill treatment, by her husband's conduct towards her."

The fœtus is about the seventh month, and generally well developed. The abdominal wall is ununited from the umbilicus downwards, and a considerable tumour hangs from the fissure. The tumour measures 5 inches from above downwards. In the accompanying figure it is shown turned aside to the right, so as to display the urinary and generative organs. The tumour consists mainly of the intestine, but partly also of the liver, the whole contained in a sac, which is adherent to the viscera and is very vascular. The sac in some parts passes back through the fissure, so as to be inserted inside the abdomen ; but it is partly united above with the umbilical cord, and below with the exposed urinary bladder. The sac contains the whole intestine, shown in the figure lying over the right arm. The rectum, traced from the anus, passes almost directly into the obtruded mass. The stomach is inside the abdomen, but the duodenum passes into the protrusion. The part of liver obtruded (lying near the middle line in the figure) measures $2\frac{1}{2}$ inches transversely, $1\frac{1}{4}$ inches from above

* Read before the Medico-Chirurgical Society on 10th January, 1890.

downwards, and 1¼ inches in thickness. It is connected by an isthmus with the rest of the liver, which is inside the abdomen.
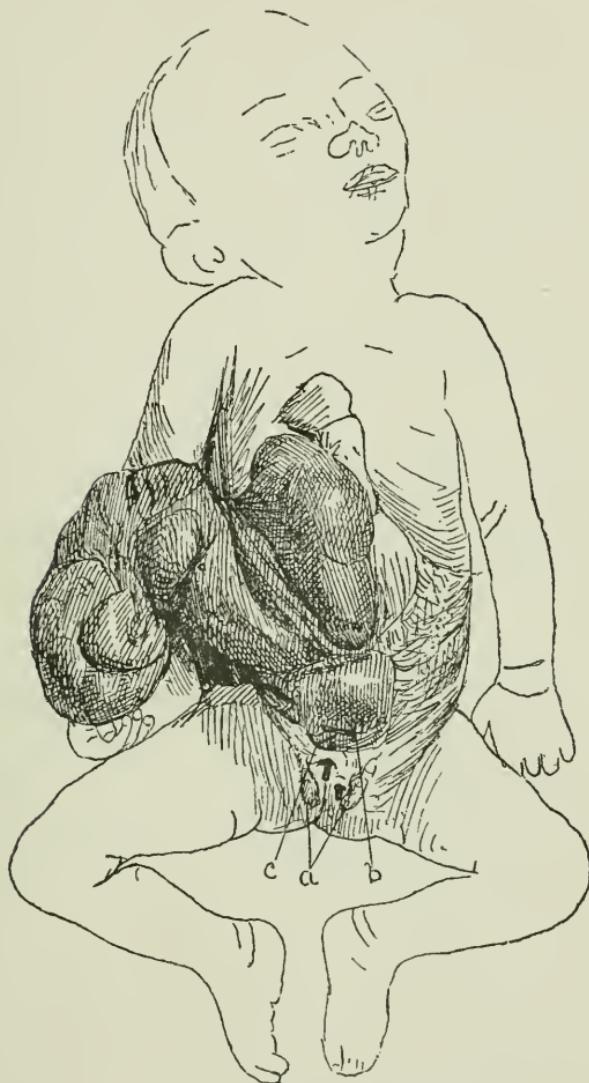
The protruded viscera, consisting of intestine and part of liver, are turned to the right. Below is the exposed surface of bladder, as in extroversion. *a*, The labia. Just inside left labium is aperture of vagina, with a probe in it. Above this another probe passes under a bridge, the canal representing urethra. *b*, left, and *c*, right ureters exposed in wall of bladder.

The umbilical cord which bounds the upper extremity of the fissure is split, and the two parts embrace the fissure, a smaller part passing to the right and containing an artery, and a

larger part to the left (shown in figure) containing an artery and vein. In the fork between the two openings there is a triangular membrane uniting them in the middle line.

The lower part of the fissure is closed by the urinary bladder, whose upper border is adherent to, or continuous with, the sac. The anterior wall is awanting, and the exposed posterior wall forms a flat surface (see figure) measuring $1\frac{1}{4}$ inch from above downwards. The lateral aspects of the bladder are continuous with the cutaneous surface, the connection extending on the left side the entire length of the bladder, while on the right it is curtailed to about three-eighths of an inch. The orifices of the ureters are present at the lower part of the bladder, the left (*b* in figure) forming a visible prominence near the middle line, while the right (*c*) is dragged over to the right side, and forms a slit-like aperture, the bladder itself having here a recess, as if locally dragged outwards.

The external organs of generation are those of a female, but somewhat altered. At the neck of the bladder there is a bridge, formed of skin with a wide channel beneath it, representing the urethra (see figure). Below this there is an exposed surface, three-eighths of an inch in transverse diameter, in the midst of which, but slightly to the left of the middle line, there is a rounded aperture, which is the vagina (see figure), and into which a probe can be passed for $1\frac{1}{8}$ inch. On either side of the exposed surface there is a prominent fold, most distinct on the left side, representing labia (*a* in figure).

Outside the labia the rounded extremities of the incomplete pubic bones can be felt, the pelvis being awanting in the middle line, and the bones standing one inch apart.

At the summit of the vagina, the uterus, with Fallopian tubes and ovaries, is found.

The kidneys, spleen, and stomach, are in their normal positions.

This is a case of fissure of the abdomen to a much greater degree than in the ordinary extroversion of the bladder. So far as the bladder is concerned, it presents the same characters as the condition named, the anterior wall being wanting, and the aperture closed by the posterior wall.

The condition arises by a defective development of the visceral arches, and it may be regarded as uncertain whether dislocation of the viscera, interfering with the completion of the arches in front, is to be regarded as the cause, or whether the protrusion is merely a consequence of the defect.

FRAMBŒSIA OR "COKO." *

By ALEX. J. F. SKOTTOWE, M.D., Hamilton,

Late Government Medical Officer and Health Officer for the
Port of Levuka, Fiji.

THE following notes on this disease have been pieced together
from the observation of many hundred cases seen in Fiji, and,
although not setting forth anything very new, may be not
altogether uninteresting, seeing that the affection is rarely
found in these northern latitudes, and, indeed, is said by
Erasmus Wilson to be "peculiar to the African race, both in
their own country and in the West Indies." It is, however,
met with throughout Melanesia—abundantly so in Fiji; by
the natives of which latter group of islands this affection is
regarded in a curious light, it being a common superstition
among the people that if their offspring do not develop
"coko" in childhood, they will grow up weak and delicate;
and they believe further that the affection prognosticates
the health and strength of adolescence. So implicit is their
faith in these conceptions, that if their children do not incur
the affection, it is often produced by inoculation.

The disease is highly contagious, and Europeans often
contract it through their intercourse with natives—as by
sleeping on mats in native houses where "coko" prevails.
Both sexes suffer equally, and it may attack persons of any
age; but the positive assertions of the natives, that two
attacks in one individual are unknown, considered along with
the popular notions of the disease, explain why, among the
Fijians, it is almost confined to children.

As seen in Fiji, the eruption consists of tubercles elevated
a third of an inch or more above the surface, and varying in
size up to several inches in diameter, rough superiorly, of
a dull yellowish colour, with some tendency to bleed, and
moist from a thickish, usually scanty, but sometimes plentiful
discharge.

In the majority of cases, the tubercles are by no means
numerous, and are found on the face, chest, abdomen, genitals,
and the inner aspect of the limbs; sometimes they are
abundantly developed, occasionally scattered over the whole
body. Usually the tubercles are distinct and well defined;

* "Coko" means a collection of particles; also the rough nodular
excrescences on the bark of trees, the resemblance of which to Frambœsia
tubercles has suggested the employment of the word for this disease.

but when developed on their favourite situations—*i. e.*, where skin passes into mucous membrane, as round the apertures of mouth, nostrils, eyes, vagina, or anus, the tubercles coalesce and form considerable tracts—in many cases, completely surrounding the orifices, but this is especially seen where the underlying tissues are soft and lax, as in the lips, anus, or vulva.

The constitutional symptoms seem to vary with the extent of the cutaneous implication and the duration of the disease. Now and then cases are met with where the affection appears to give almost no trouble, and where the children look, except for the eruption, in fairly good health. Generally, however, the little patients become restless, fretful, and languid, often weak from pain and anorexia, and sometimes greatly emaciated, and reduced almost to skin and bone. The disease, however, tends to heal, but is very chronic in its course, lasting from months to years, and the cicatrices left as the legacy of the eruption, indicate the deep local involvement of the skin.

The cause of the disease is very obscure, but it is worthy of note the wide distribution of the affection in the Western Pacific. Diet seems to exercise a modifying influence, probably in virtue of its relation to the general health, for it is well known that the children of the poorer suffer more than those of the chief or wealthier classes. Though there is really no such thing as poverty or want among the Fijians, and the poorer natives have plenty to eat, yet they lack the variety and quality of food indulged in by the richer. The natives of these islands are not pure vegetarians, for their food, in addition to the staple articles, yams and taro, consists of fish, birds, figs, shell-fish, snakes, &c.; but many of these being considered valuable property, are used by those who can afford them.

The foolish, and it might be added pernicious, custom among Fijian mothers of suckling their children for two years, and the then somewhat sudden change at the end of that period from fluid to solid food, principally in the shape of yams, tends to weaken the constitution by exhibiting food, first, deficient in alimentary principles ; and, second, unsuited to the age.* That adults suffer more severely than children has been long

* In connection with this subject it may be mentioned that the death-rate among Fijian children from diarrhœa, dysentery, and bowel complaints generally is considerable, and from all causes is very high. Many agencies, such as want of attention during sickness, and bad sanitary arrangements, doubtless combine to swell this death-rate, but probably a not unimportant factor is that of diet. Food of inferior quality or of difficult digestion is not only one of the most frequent causes of intestinal affections, but may result in general malnutrition of the body, predisposing to disease.

recognised, and to them the misery of the disease developed
on its favourite situations; and the knowledge that one attack
confers complete immunity may help to explain the universal
Fijian desire to confine the disease to infancy.

Their other theories are relics of antiquity; but so faithful
to their traditions are these South Sea islanders, that the
disease amongst them is allowed to run its course unchecked.

CURRENT TOPICS.

GLASGOW AND WEST OF SCOTLAND MEDICAL ASSOCIATION
("GLASGOW MEDICAL JOURNAL").—The annual meeting of the
Association was held in the Faculty Hall, on 31st January,
1890 — the President of the Association, Professor M'Call
Anderson, in the chair. The expenses of the *Journal* during
the past year had been exceptionally heavy, owing to the
outlay connected with the publication of the Index, but the
Treasurer's report notwithstanding was highly satisfactory,
and showed a good balance in favour of the Association.
During the year twenty-five new subscribers had joined, and
by death and resignation there had been sixteen withdrawals,
leaving an increase of nine new members. After the Editors'
report had been submitted and adopted, the following office-
bearers for 1890 were elected:—

President,	PROFESSOR T. M'CALL ANDERSON.
Vice-Presidents,	Dr. W. FREW, Kilmarnock. Dr. A. NAPIER, Crosshill.
Editors,	Dr. JOSEPH COATS. Dr. JOHN LINDSAY STEVEN.
Treasurer,	Dr. G. T. BEATSON, 2 Royal Crescent, W.
Secretary,	Dr. JOHN LINDSAY STEVEN, 34 Berkeley Terrace.

General Business Committee.

Dr. D. MACPHAIL, Whifflet.	Dr. WHITELAW, Kirkintilloch.
Dr. G. S. MIDDLETON.	Dr. J. K. KELLY, Crosshill.
Dr. W. L. REID.	Mr. HENRY RUTHERFURD.
Dr. BRUCE GOFF, Bothwell.	Dr. FRANK SHEARAR, Paisley.

GLASGOW ROYAL INFIRMARY.—The managers have appointed
Dr. Charles Workman histological assistant to the pathologist,
Dr. J. Lindsay Steven.

THE VICTORIA INFIRMARY.—This, the most recent addition to our Glasgow hospitals, was formally opened on Friday, 14th February, 1890, by His Grace the Duke of Argyle. A reception was held in the Board Room, and the company partook of a cake and wine luncheon in the large ward, after which the ladies and gentlemen present adjourned to Langside Church, where an opening address was delivered by the Duke of Argyle. The Infirmary was thrown open to the inspection of the public on the next day; and patients were received on and after Monday, 24th February, 1890.

TENTH INTERNATIONAL MEDICAL CONGRESS.—Active preparations are being made for the meeting of the Congress in Berlin from the 4th to the 9th August, 1890, and we have received an intimation to invite our readers to attend the meetings. The General Secretary is Dr. Lassar, 19 Karlstrasse, Berlin, N.W. Membership may be obtained by payment of a fee of 20 marks (£1) to Dr. M. Bartels, Leipzigerstrasse 75, Berlin, S.W., and members are entitled to a copy of the Transactions.

PROF. VIRCHOW is engaged upon a new edition of his *Cellular Pathology,* which he intends to publish on the occasion of the International Medical Congress. The last (fourth) edition of this work appeared in 1872.—(*Journal of American Medical Association,* 25th January, 1890.)

TUBERCULOSIS AS A PREVENTABLE DISEASE.—The new views with regard to the etiology and preventive treatment of tuberculosis are rapidly gaining ground in all parts of the world. This is a circumstance which is borne in upon us by the numerous articles on the subject which are constantly appearing in the pages of our exchange journals, as well as in the daily press. In our own city, Dr. J. B. Russell loses no opportunity of urging a consideration of the most recent researches upon the public, and in this connection we would refer our readers to his able address on " The Dangers of Infected Milk," to the members of the Glasgow and West of Scotland Agricultural Discussion Society, a *resumé* of which appeared in the *Glasgow Herald* of 16th January, 1890. In Edinburgh, Dr. Sims Woodhead and Professor MacFadzean are doing their best to promulgate the truth on this most important matter, and the former gentleman, nearly two years ago, lectured on the subject at the Parkes Museum of Hygiene in London. In France and Germany investigators are constantly in search of

new facts to prove the theory, and in the far east, our contemporary, the *Indian Medical Gazette*, is doing good service by keeping its readers abreast of the times. Recently we had the privilege of addressing the members of the St. Mungo's College Medical Society, on Tuberculosis as a Preventable Disease; and shortly afterwards we were gratified at having enquiries from a medical man in England with a view to urging reforms in the town council, of which he is a member, in the Midland counties.

We all know well the part which milk plays in the propagation of such diseases as scarlet fever and enteric; but it is only of recent years that we are becoming fully alive to the fact that milk is no less dangerous as regards the spread of tubercular disease. Dr. Koch, in his monograph on the etiology of tuberculosis, supposed that the milk of tubercular cows was only dangerous when the udder was involved, but Dr. Ernst of Boston, in a paper entitled, " How far may a Cow be Tuberculous before her Milk becomes Dangerous as an article of Food," contained in the November, 1889, number of the *American Journal of Medical Sciences*, has shown that the milk of tubercular cows, having no lesion of the udder, may contain the virus and produce the disease by inoculation. Previous experiments by Bollinger, Bang, Galtier, and others *favoured* the view that the milk of tubercular cows without disease of the udders might give rise to tuberculosis; but Dr. Ernst's experiments, carried out under strict scientific conditions in a farm specially set aside for the purpose, show that this is absolutely the case. We cannot refer to the experiments in detail, but, to use the words of the author, they show, " 1st, and emphatically, that the milk from cows affected with tuberculosis in any part of the body may contain the virus of the disease; and 2nd, that the virus is present whether there is disease of the udder or not." Of great importance in connection with this matter is the paper of Dr. Brush, read before the New York Academy of Medicine on 29th April, 1889, of which we gave a short notice in our " Current Topics " for July, 1889, page 37. In this paper Dr. Brush contended that, " if a community is closely associated with inbred dairy cattle, tuberculosis prevails "—a contention which receives a very remarkable confirmation in the paper by Dr. Ernst to which we have just referred.

The facts which we have just brought under the notice of our readers go a long way to prove that tuberculosis, like any of the specific fevers, is to be regarded from the sanitary point of view as a preventable disease, and to demonstrate the

necessity of our sanitary authorities being immediately provided with absolute powers for dealing with it as such.

LANOLINE SOAP.—We have received from Messrs. Burroughs, Wellcome & Co. specimens of Lanoline Soap. This soap is the first of its kind introduced into this country ; that is, the first soap introduced to the medical profession containing an excess of fat. Moreover, the excess of fat consists of lanoline, which under ordinary circumstances is not saponifiable. The lanoline is set free in the water, during washing, from whence it is absorbed by the skin, for which it appears to have an affinity. Lanoline takes the place of the natural fat which is washed away, and thus contributes greatly to nourish the skin, and to preserve its natural softness and healthful condition.

. From personal experience we can say that the soap is a most agreeable one to wash with, and commend it to the notice of our readers. We also received a specimen of Lanoline Soap containing ichthyol.

REVIEWS.

Lectures on Massage and Electricity. By THOMAS STRETCH
DOWSE, M.D. Bristol : John Wright & Co.

DR. DOWSE is to be congratulated on the production of a work which brings the subject of masso-therapeutics up to date, and which is likely to bring this method of treatment prominently under the notice of practitioners in this country, who are, to say the least, distinctly blameworthy for the apathy with which this most important therapeutic agent has been regarded ; or, what is even worse, for the half-hearted way in which its use is at times recommended to patients by some medical men who are absolutely ignorant of the principles of this method of treatment. A few days ago the present writer was told by a lady that she had been recommended massage by a surgeon, but was directed by him not to employ a professional masseuse, as in that case " the rubbing might prove too severe." One of the family, utterly ignorant of the methods to be followed, and without training or practice, is at present carrying out the treatment. Surely this habit of recommending massage (if the name can be applied to such a farce) which obtains so generally among medical men, is only likely to bring discredit on a valuable

therapeutic agent, an agent whose value is not theoretical, but has been fully attested by the record of recovery of many patients who, without it, must have continued a burden to themselves and all connected with them. The drug fetish still marches in the van, and so long as patients demand something for their money in the shape of drugs, so long will many doctors pander to this demand, and so long will such rational methods of treatment as regulation of diet, massage, exercise and electricity remain in the background. No doubt the charlatanism so long associated with both electricity and massage is responsible, to some extent, for the coldness with which both are treated; but perhaps this apathy is partly to be accounted for by the fact that little or no instruction is given on these subjects to students, who take their degree, in many cases, in blissful ignorance of the existence of such visionary articles as "volts" or "ohms." But what can be expected when examining boards ignore the existence of fevers and dietetics ? It is sincerely to be hoped that medical men will soon rise to the conception that massage and electricity are valuable therapeutic agents if carefully used, that a masseur or masseuse is made, and not born, like the poet (though, no doubt, aptitude for the work is of importance), and then, perhaps, those unfortunates who can be benefitted by massage, and massage employed in a rational way, will have a chance. It is often stated in books and articles dealing with this subject that the doctor in attendance must regulate the proceedings of the masseur as to method and duration of the séance. How many gentlemen in the medical profession understand enough even of the elements of the subject to do this with benefit to their patients and credit to themselves ?

And now, after this digression, let us return to Dr. Dowse, who, in his introduction, tells us that in his experience of massage he " has gained information concerning its nature and its effects which is not to be found in any published work," and continues, " even now, I feel, that an extended experience is still required to put it upon a satisfactory and a *safe* footing as a therapeutic agent." Those who have had most experience in treatment by massage, are most alive to the fact that massage is not a simple method of treatment to be used haphazard when other means fail, but that it is a therapeutic agent which, if employed judiciously, will in suitable cases result in great benefit to the patient, yet, if used indiscriminately and injudiciously, may be useless, or even result in serious injury.

The last two lectures are on medical electricity, and though good in themselves, cannot be recommended to those who wish to study the matter from the foundation. To understand these lectures clearly, one must presuppose some knowledge of the subject.

Taken as a whole, Dr. Dowse's Lectures are in every way worthy of careful study, and can be very strongly recommended to those who wish to become more conversant with two such important methods of treatment as massage and electricity will eventually come to be regarded.

Is there any necessity for inserting in the index the names of medical men who have sent Dr. Dowse cases ?

To judge by their absence from among the other plates at the end of the work, Dr. Dowse seems to think the motor points of the head and trunk merit no attention.

Insomnia and its Therapeutics. By A. W. MACFARLANE, M.D. London : H. K. Lewis. 1890.

THE first 77 pages are devoted to a pretty full discussion of the physiology of sleep, and to some general remarks on *insomnia.* Here, practically, the special character of the work ends ; and, in spite of Dr. Macfarlane's statement in the preface, " that the subject is one which receives but scant notice in any text-book on medicine," we are inclined to think that all the doctrine about *insomnia* to be found in the following 275 pages could have been made more accessible to advanced students and junior practitioners, for whom the work is intended, by reduction to general principles and compression within a very limited number of pages. It cannot be doubted that the special subject dealt with is fully and ably discussed ; our objection is not that *insomnia* has been drawn out to its furthest limit, but that too much irrelevant matter has been added to serve as padding. This padding is skilfully managed, and from it much information may be derived ; but, if the book is to be true to its title, it should not be there at all. We select one or two illustrations of what is meant :—Chapter III deals with *neurasthenia,* and extends over 18 pages ; but of this, 16 are devoted to the symptoms and general treatment of the disease, and only two to the discussion of the insomnia, so often one of its most distressing symptoms. A reference to Chapter X, which deals with *gout,* illustrates the same thing. This extends over 27 pages, of which only a small part contributes to our knowledge of the phenomena of insomnia incident to this

disease. We will not, of course, question the fact that a knowledge of the disease, be it neurasthenia or gout, or anything else, is essential before we can hope to cope with any one symptom of it; but this knowledge is to be derived from special treatises and text-books, which Dr. Macfarlane's work, however excellent, cannot hope to supersede.

On pages 61 and 62 there are tables of the various diseases associated with insomnia. These are of little value, because they are incomplete, and, if completed, would be practically valueless, because then they would embrace practically every known disease under the sun.

On the employment of alcohol in sleeplessness, Dr. Macfarlane is decidedly emphatic. He says—" Alcohol taken in the form of whisky or brandy, of good quality, and in judicious quantity, is probably one of the most reliable and least hurtful hypnotics we possess. Its efficacy has stood the test of time." This is surely dangerous doctrine for " senior students and junior" practitioners to follow.

We will conclude our remarks by quoting what, in our hands, has proved in many cases a most efficient method of treating certain forms of sleeplessness :—" If a patient awake during the night, and is unable to fall asleep again, he should on no account lie tossing about, worrying on his fate. Such a course invariably prevents the return of sleep. It is better to rise and walk two or three times round the room, brush the hair, take a drink of water, and then go back to bed. If that does not prove efficacious, he should light a candle, and take to a novel or other light reading, that he may occupy his mind. It is at once a comfort and an aid to sleep."

Dr. Macfarlane's book is most interesting in matter, and the writer's style makes reading a pleasure. Still it is to be regretted that it has grown so large by the introduction of irrelevant matter. We want to know more about these forms of insomnia, the explanation of which is so often mysterious. The typography, we need hardly say, is excellent.

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An Elementary Treatise on Human Anatomy. By Joseph Leidy, M.D., LL.D. Second Edition, Re-written. London: Smith, Elder & Co. 1889.

Although this appears as the second edition of Dr. Leidy's book, it must be regarded as essentially a new work ; for not only is it twenty-five years since the previous edition appeared, but the changes made extend to its very elements, there being not a page and scarcely a paragraph which has not undergone

reconstruction. It is hardly a paradox to say that one is
struck, at the first glance, at once with the familiarity and the
strangeness of the aspect of the interior ; the former quality
it owes to the fact that nearly all the woodcuts of the bones
and ligaments, and a large proportion of those of the muscles,
have been taken from Wilson's *Anatomist's Vade-Mecum*, and
the latter results from a bold attempt on the part of the
author to change the nomenclature of the muscles, and to
introduce English instead of Latin titles. Dr. Leidy's idea of
the English language is a strange one, and has apparently
been obtained by a course of study under Wendell Holmes's
Latin Tutor ; the " terete pronator," the " pollical opponent,"
the " long hallucal flexor," the " nasal pyramidal," and the
" costal elevators," are worthy of him who wrote—

> " How dulce to vive occult to mortal eyes
> Dorm on the herb with none to supervise."

We doubt, however, if the said *Latin Tutor* would approve
of the author's identification of " supra " with " superior," and
" infra " with " inferior " in such terms as " supra-serratus,"
" supra-labial elevator," " infra-oblique," &c., nor can we think
it correct Latin to substitute " pre-rectus " for " rectus anticus,"
and " post-rectus " for " rectus posticus."

The author describes the corpus striatum as consisting only
of the caudate nucleus, while he mentions the lenticular
nucleus and claustrum as separate masses of grey matter
embedded in the hemisphere. There is no doubt that the
width of the internal capsule, and the great mass of white
fibres it contains, in some measure justifies this description,
but it is doubtful if what is gained by such a change com-
pensates sufficiently for disturbing an accepted arrangement ;
especially as it is well known that the name of *striate* was
given to the ganglionic mass because of the appearance of the
internal capsule and lenticular nucleus.

The description of the action of the muscles is throughout
bald, unsatisfactory, and incomplete. We especially miss an
account of the action of the interosseous muscles of the hand
and foot in their connection with the extensor tendons and
proximal phalanges, that action which was well elucidated by
Duchenne, of Boulogne.

While there is very much to criticise in the book, we must
admit that the author shows a laudable desire to avoid purely
traditional descriptions, and makes many statements which,
when duly weighed by the thoughtful anatomist, are found to
have other ground than novelty alone to recommend them.

We would especially refer to the description of the temporal bone and its ossification, containing as it does the results of much careful study and original observation; and we would also commend the account of the nerve nuclei in the medulla, and the original diagrams by which it is illustrated, as worthy the attention of the student.

Clinical Lectures on Varicose Veins of the Lower Extremities. By WM. H. BENNETT, F.R.C.S., Surgeon to St. George's Hospital. London: Longmans, Green & Co.

THE Lectures, with the exception of the third, have already appeared in the *Lancet.* They are now published, with a few trifling alterations and additions, as originally delivered. Common as is this class of cases, and frequent as is their appearance before every practitioner, few can take up these Lectures and read them without profit, more, perhaps, in regard to the etiology, pathology, and symptoms of the condition than to the treatment. The author has for many years directed his attention to the subject, and tabulates some 550 cases which he takes as a basis for his observations. As the author states in his preface, the Lectures pretend in no way to be an exhaustive treatise on varix, but so clear and instructive are they, that one almost wishes they had been sufficiently extended to form such a treatise. Some of the conclusions derived from a study of the cases given in the tables may be alluded to. Thus it appears "that, discounting the influence of pregnancy, the tendency to the development of varicose veins in the lower limbs is greater in men than in women." Again, "that the disease for the most part arises from congenital, and often hereditary defect, or other abnormality in the venous apparatus;" . . . "that two distinct classes of the disease exist—one beginning in the deep veins, subsequently involving the superficial; the other affecting the superficial veins only, usually the long saphena and its radicles, and being confined entirely to tall subjects," and lastly, "that the large mass of varicose veins in the lower part of the thigh, often associated with a globular varix at the saphenous opening, may, in many cases, although apparently connected with the long saphena, be independent of it, being fed for the most part by veins coming through the fascia from the deeper parts of the limb."

The author, while ascribing to congenital and often hereditary imperfection the various conditions of general and local varix, believes that, in many cases, some unusual strain must

be thrown upon the faulty mechanism for varicosity to take place, and that the commonest causes of this extra strain were constipation and suppressed or deficient menstruation.

On the subject of treatment the author has much to say, but the methods described are mostly those in practice with surgeons. Thus, where conservative measures appear sufficient, pressure by means of an elastic bandage is advocated; and where operative procedures are requisite, excisions of portions of the affected vein, or total extirpation of the diseased parts is advised.

The book is one we would very warmly commend to all general practitioners. The class of cases with which the author treats so constantly presents itself to every medical man, that all would do well to possess this valuable little book.

Cancer and its Complications. By CHARLES EGERTON JENNINGS, M.S., M.B. London: Baillière, Tindall & Cox. 1889.

THE object of this work is best expressed in the author's own words—"It has been written to elucidate the following points:—

" 1. Cancer is a local disease.

" 2. There are several varieties of cancer, distinguishable from one another by their microscopic character; but the degree of malignancy of a cancerous growth depends, not merely upon its structural, but upon its anatomical site.

" 3. Cancer frequently occurs in combination with some other disease, and is often preceded and caused by disease or injury of the tissue from which it springs.

" 4. The occurrence of cancer may often be prevented, and complete extirpation of the disease in its earliest stage may be considered curative.

" 5. Further investigation of the action of certain drugs, among other things, is still needed. Evidence which has been advanced in favour of the curative action of some mineral and vegetable substances cannot be disregarded."

Such are the objects which the author has laid himself out to discuss, and so far he has been successful. One is tempted to ask, however, where is the need of burdening an already overwhelming literature with another dissertation which deals with questions that have been thrashed out over and over again, and which adds nothing to what is already known. If it is possible that there exists any one who has never read anything about cancer, to such the work is warmly recom-

mended as both profitable and interesting; but to those who
are familiar with the various and numerous discussions which
have taken place within recent years, there is nothing of
novelty or instruction to be gained in its perusal. We may
possibly be a little severe in our criticism upon Mr. Jennings'
work; but with such a subject as cancer, which is already
overburdened with papers, pamphlets, books, and discussions,
we seek to have our knowledge of it advanced by new facts,
either as regards its pathology or in the matter of treatment,
and not still further encumbered by fresh dissertations on old
theories and accepted practices.

Watts' Dictionary of Chemistry. Revised and entirely re-
written, by M. M. Pattison Muir, M.A., and H. Forster
Morley, M.A., D.Sc., assisted by eminent contributors.
In four volumes: Vol. II. London: Longmans, Green
& Co. 1889.

The second volume of this encyclopædic work has quickly
followed the first, and is worthy of its predecessor. We may
notice that medical readers will find here a careful and
complete account of the·chemistry of the therapeutic sub-
stances which they are accustomed to prescribe. Under
cinchona bark, for example, there is a succinct account of
the history of the introduction of this agent, of the varieties
of barks, the organic constituents, modes of separation of the
alkaloids, &c., as well as a notice of the various cinchona
bases and derivatives, whose number is really appalling.
Another article of medical interest is that on Fermentation
and Putrefaction. It is interesting to obtain a review of
these subjects from the chemist's standpoint, and it is instruc-
tive to find the chemical products evolved in these processes
fully discussed. We have alcoholic, acetous, lactous, butyric,
and other forms of fermentation described. We have also
articles on the bases produced by fermentation, on sugar-
forming ferments, on peptone-forming ferments, on anti-
ferments or antiseptics. The paragraphs devoted to the
subject last named enumerate the substances which have been
tested as to their antiseptic action, and give indications as
to their value in this respect.

As an example of a subject of more general interest, we
may refer to the article on Geological Chemistry. In this
we have, among many other matters, such subjects as these
considered—namely, classification of rocks, origin of limestone,
hydrothermal action, recent formation of minerals, origin of

mineral veins, chemistry of the volcano. It is, indeed, impossible to look through the volume without meeting with interesting matter. We have therefore to repeat our commendations of the first volume, and to express our admiration of the completeness and fulness of the work.

Suppuration and Septic Diseases: Three Lectures Delivered at the Royal College of Surgeons of England in February, 1888. By W. Watson Cheyne, M.B., F.R.C.S. Edinburgh and London: Young J. Pentland. 1889.

Those who had the opportunity of hearing these lectures delivered, or read them subsequently when they appeared in the weekly medical periodicals, will welcome their re-appearance in the present form. Although practically a reprint, the author has introduced, in small type, further facts connected with certain points. By so doing, the subject is brought well up to date, and the reader may feel, when perusing the present pamphlet, that he is acquiring the most recent information and instruction upon all points connected with suppuration and septic diseases.

The subject is treated from both its clinical and bacteriological aspect, and in a manner which will enable any practitioner who may be ignorant of the technical facts associated with the latter to grasp the practical bearing of the one upon the other. It is, however, with the bacteriological aspect that the lectures are most largely concerned, and which gives them their essential value. Few are better able to discuss this side of the subject than Mr. Cheyne. A pupil of Sir Joseph Lister, and an ardent student of the Listerian theory, Mr. Cheyne, by his own original work as well, is particularly well fitted to expound and inculcate the theory and practice of antiseptics in relation to septic disease and suppuration. The value of these lectures is not a little enhanced by the liberal allusion to opinions and practices of other writers and investigators. Thus, in more than one place, the reader is impartially allowed to draw his own conclusion as to which opinion seems the more feasible. As an illustration of this, we may instance the question of pure pus being formed without the intervention of micro-organisms. Mr. Cheyne still maintains that he has seen no pure creamy pus in which microbes could not be found; but the views in opposition to this by Orthmann, Grawitz, de Bary, and others are given.

The book is one we cannot speak too highly of, and one which we warmly recommend to all practitioners.

Essentials of Medical Anatomy. By H. R. KENWOOD, M.B., C.M., L.R.C.P. (London). Edinburgh and London : Young J. Pentland. 1889.

THE subject of this little work is admirable, and it would be welcome were we not already well supplied with similar manuals, or at least with manuals entering fully into the subject of anatomy as applied to the delimiting of organs, a knowledge of which is so important to the student of clinical medicine.

Part of the material of this work was collected while the author was a student, and part has "been compiled from Quain's and Gray's *Anatomy.*" These different parts can be very readily discriminated in the text.

The following extracts will indicate the character of the work, and are evidently part of "the material compiled by the writer when a student." In speaking, in the preface, of mapping out organs by means of a soft crayon, he tells us that, "Such a diagram is far easier remembered, and the practical manner in which the work is learned, amply repays one." On page 13, we find this paragraph :—

"*Aortic.*—The aorta reaches nearest the chest-wall, opposite the second right costal cartilage, and therefore the 'aortic area' is here."

On page 62 we are told that "A table of the average weights of the more important *male organs* in the adult is serviceable for the *post-mortem* room ; in females they weigh somewhat less." At the end of the table which follows, the uterus and ovaries are enumerated. Such examples might be multiplied. Why has Mr. Kenwood not got a friend such as Charles Lamb had ?

MEETINGS OF SOCIETIES.

MEDICO-CHIRURGICAL SOCIETY OF GLASGOW.

SESSION 1889-90.
MEETING VII.—17TH JANUARY, 1890.
MEDICAL SECTION.

DR. J. WALLACE ANDERSON, *in the Chair.*

I.—TWO CASES OF ATHETOSIS.
BY DR. WORKMAN.

This article will appear in a future issue.

II.—THE WORKING OF THE NOTIFICATION OF INFECTIOUS DISEASES ACT.

By Dr. P. Caldwell Smith.

Dr. Smith opened his paper by giving the methods of notification in those towns in which it had been adopted previous to the passing of the Act, and showed that the method of notification adopted by the Act had already, to a large extent, existed in most of these towns.

He then stated that the dual system in large towns might become cumbersome in practice, and suggested that to overcome the difficulty of notification by the occupier, that either, as in Leicester, the occupier should not be bound to notify if a medical man was in attendance, or that in towns like Glasgow, branch sanitary offices should be established, at which verbal notification could be given by the occupier. Notification by the occupier alone was shown to be useless, and he instanced Greenock as an example.

Clause 6 of the Act was then dealt with, and he endeavoured to show that the notification of erysipelas and puerperal fever would be of little service. It appeared to him to be a matter of regret that measles and hooping-cough were not included under this clause, and not left to be adopted by a separate clause. Dr. Smith showed that the difficulty was in most instances a purely financial one ; but that in a sanitary aspect their inclusion would be of great service in limiting the spread of these diseases.

The adoption of the Act would, however, prove of little service unless complete isolation and strict disinfection were carried out, and he thought that means for these did not exist except in one or two of the larger towns.

Dr. Smith thought that the great error in the Act was, that it was a purely permissive one, and suggested that the Act should be made compulsory, as very few of the burghs in Scotland were taking the slightest interest in the Act, although Glasgow, Hillhead, &c., were showing a good example.

He then showed, by some statistics, derived from the town of Huddersfield, and arranged by Dr. Cameron, lately medical officer of health there, that the adoption of notification, and the carrying out of other measures, had a distinct effect in lessening the death-rate from zymotic disease.

Dr. Christie coincided generally with Dr. Smith's criticisms on the Infectious Diseases (Notification) Act. Regarding the notification of erysipelas, he did not see any necessity for it,

as the disease did not generally spread extensively as an epidemic ; but, as regards puerperal fever, he had a strong opinion that it should be compulsory. The disease was often communicated by the medical attendant and by nurses ; and it was of importance that the authorities should have power to limit, as far as possible, the extension of the disease. The reporting of such cases would afford reliable statistics as to the mode by which the disease was communicated. Regarding the intimation of measles and hooping-cough, he was of opinion that they should, and would, shortly be included ; but there were difficulties in the way at present. The financial difficulty could not be altogether ignored. In a city, such as Glasgow, there would be a very large expenditure for the cost of notifi- cation, and a still larger expenditure for carrying out the notification to any practical result. The sanitary staff would require to be doubled. Heretofore, in districts where notifi- cation of certain diseases was not compulsory, as in Glasgow and suburbs, the Local Authority was almost powerless in arresting epidemics of typhus, enteric, and scarlet fevers. In general, the mischief was done before the Local Authority was aware of its existence, the principal function of the medical officer of health, and the sanitary inspectors, being that of detectives. It is to be hoped that, when the Local Govern- ment Act comes into operation, the counties throughout Scotland will adopt the Infectious Diseases (Notification) Act, and thus bring the rural districts of Scotland under efficient sanitary supervision.

Dr. Glaister said, the paper which had just been read was one of more than usual interest at present, by reason of the adoption by many Local Authorities of the permissive notifi cation Act, which had become law at the beginning of the year. Although the meeting was not exhilarating for the reader of such a paper, because of the paucity of members present, there must be this satisfaction to those who had all along supported a measure based on the lines of the present Act, that while in May of 1882 a much larger meeting than this had assembled here for the purpose of discussing clauses of similar import in the Glasgow Police Bill, then being considered locally before presentation to Parliament, there was then a strange majority of opinion that the incorporation into the Local Act of such clauses would be exceedingly hurtful to the close and intimate relationship which subsisted between the practitioner and his patient. It would be remembered by most of those present that resolutions were passed against these clauses, and that with a fair show of unanimity. Now, the profession has

accepted the inevitable, and its absence to-night may fairly be considered evidence of that fact.

Now that such an Act is law it is to be sincerely hoped that it will be adopted by every Local Authority; otherwise, its beneficial results will not be experienced.

He had a grave doubt that it would be so adopted, for the reason, as had been shown in the Public Health Act, that it was permissive. Any one Local Authority not adopting it would be a menace to its neighbours who had done so. Dr. Smith had made something of the difficulty that the practitioner would experience in doubtful cases in respect to his immediately notifying. The words of the Act were that he was to notify " forthwith " certainly; but that was qualified by the succeeding words in the clause, " on becoming aware that the patient is suffering from an infectious disease, &c." So that in this light there was not the least chance that a practitioner would come under the penal clauses of the Act for want of notifying where he had reasonable doubt. Moreover, it was quite clear that the practitioner was to be the sole judge of the character of the cases which required notification. The medical officer of health could not go behind his certificate, else there would be no end to diagnostic quarrels. It is presumed by the law that every registered practitioner is qualified to pronounce an opinion on any given case; but, spite of this, there will happen conscientious sins of omission and of commission. Dr. Smith, too, had said he thought there were certain diseases codified in the Act about the diagnosis, of which there would be considerable divergence of opinion; and the instances he adduced of diphtheria and puerperal fever illustrated his remarks. There undoubtedly did exist great difference of opinion on the question of diphtheria, as there also did in the diagnosis and nature of puerperal fever; but it seemed to him that the solution of the apparent difficulty was to be met in the carefully considered judgment of the individual practitioner, and the generally accepted views of the profession regarding the nature of these diseases. An error of judgment on the side of being too careful would be less harmful than one on the other side.

He agreed with Dr. Smith as to the advisability of including measles and hooping-cough in the list of named infectious diseases; but he, like everybody else, saw very grave difficulties in the way. It was true that the mortality from them was sometimes high, but the chief difficulty lay in their effective isolation.

He was much pleased at the passing of this Act, for it pre-

vented men, who traded in a reputation for keeping their cases quiet and out of the knowledge of the sanitary authorities, from doing so any longer except at greater risks than they formerly were: and, further, he was satisfied that it would enable the sanitary department to " spot" latent epidemics by early knowledge and isolation of cases.

On the whole, then, he would say that the chief defect of the Act lay in its being a permissive one.

Dr. Hugh Thomson said one difficulty in regard to the working of the Act would be the isolation of all cases, in whatever social condition they (the infected) might be placed. It was a very hard thing to oblige a young lady to be shut up for five or six weeks in a common ward with, it might be, persons of indifferent character. Provision should be made for patients both able and willing to pay for their accommodation in a hospital, and to have their own medical man. As to measles, it was doubtless excluded from the hopelessness of preventing the spread of the disease by any such means as were contained in the provisions of the Act. In his opinion the only way of treating such a disease was in the way small-pox was treated, which, like measles, was a disease from which, before inoculation and vaccination, no one was exempt; that is, by inoculating at a favourable season, and avoiding being complicated by other diseases, as hooping-cough, bronchitis, pneumonia, &c. By this means the disease might be limited to the summer season, and in a great measure to children at a suitable age.

Dr. A. K. Chalmers believed that Dr. Thomson was wrong in stating that measles was usually most prevalent in the winter months. On the contrary, the epidemic curve showed the incidence to be greatest in spring and early summer. Dr. Smith's condemnation of sulphur as a germicide was quite supported by laboratory experiments. Except under conditions of concentration almost unattainable on a large scale, it had little germicidal action. Yet the evidence in its favour— such as was supplied by the experience of its use in infectious hospitals and elsewhere—could not thus be set aside. Its failure in one instance and its success in another was probably related to the amount of moisture in the air at the time. It was too late in the day to speak of disinfecting the air; but the air which carried the germ might be made to carry the germicide, and as long as this was attempted sulphur dioxide had some claim.

Dr. James Hamilton expressed astonishment at the apparently small interest this new Act had excited in Glasgow.

Unlike Dr. Smith and the other gentlemen who had spoken, he considered it a very defective piece of legislation, and one which had all the marks of being hastily conceived in many of its details. In the first place, he failed to see any necessity for such an Act, at least in Glasgow, where there was sufficient available machinery of a much cheaper kind; and he had yet to learn what more would be effected for preventing the spread of infectious disease under the new Act. Apart from statistics —the value of which in this case he thought would be exceptionally questionable—the only other benefit which he saw might accrue from the new Act would be the possible early detection of the *source* of any one epidemic—say, for instance, in the milk supply. The value of the latter was certainly not to be underrated; but even this was quite possible under the old state of things, with a very slight alteration.

Coming more particularly to the clauses of the Act, the dual notification was, in his opinion, superfluous. What possible benefit would be obtained by the head of the family, or other members of it, giving notification, if the doctor gave it ? And in the event of an infectious case being discovered which had not been notified because no medical man had seen it, would it not be an easy matter for the inmates to plead ignorance of the nature of the illness ? Then, again, Clause VI was defective both in what it included and what it excluded, and would most undoubtedly foster a system of loose diagnosis. Here it was to be presumed, of course, that the medical man in attendance was to be the sole judge. It was, no doubt, a good axiom to diagnose the disease first and afterwards treat; but in practice it was not unfrequently very different. Some of the diseases mentioned in the Act were impossible, in many instances, of *decided* diagnosis at all, although treatment might be directed properly enough. Small-pox, typhus and scarlet fevers, might be considered decided enough; but the same could not be said of diphtheria, membranous croup, enteric or puerperal fever. As for the latter (puerperal fever), he could not understand why it (and the same remark might apply to erysipelas) was included at all, even supposing medical men were at one on the question of what this disease really was. But taking the term in its loose acceptation, was it possible for the sanitary authorities to do anything to prevent its spread ? The doctor and the nurse were in reality the only dangerous elements, referring, of course, only to private as apart from hospital practice ; and unless it was proposed to deal with them in some mysterious fashion, he did not understand what else was intended.

The exclusion of measles and hooping-cough could only be accounted for on the ground of the prevalence of these diseases, and the consequent expense which their inclusion would incur, for neither the danger nor the mortality were to be compared with that of some of the diseases named in the Act. Altogether this clause was most unscientific and unsatisfactory.

What he wanted to know was what Dr. Russell and others would do with the information once they received it. Compulsory removal of cases against the medical attendant's wishes was surely not thought of.

Dr. John Brown pointed out that all the advantages to be derived from the Notification Act were probably not apparent at present. The information gained under the Notification Act would be a good basis for further legislation, if that was shown to be required. No extra fine diagnosis will be needed under the Notification Act, all that a medical practitioner requires to do is to act upon the safe side, in notifying every case that he has a reasonable suspicion to be an infectious case under the Act; because, in the one case he will receive 2s. 6d., and in the other run the chance of losing 40s., and considerable trouble besides.

After the *Chairman* had made some remarks on the omission of measles and diphtheria from the list of diseases to be notified, Dr. Caldwell Smith replied.

GLASGOW SOUTHERN MEDICAL SOCIETY.

Session 1889-90.

Meeting VII.—16th January, 1890.

The President, Robert Pollok, M.B., *in the Chair.*

I.—specimens illustrative of putrefaction, fermentation, and antiseption.

By John Dougall, M.D.

Dr. Dougall showed four specimens illustrative of putrefaction, fermentation, and antiseption, prepared sixteen years ago.

No. 1 was a bottle containing a watery solution of beef juice, which had been kept in the dark and the air excluded. It was still very fœtid; and this was held to show how excretory matters, when lodged in imperfectly constructed

and unventilated drains, may continue to putrefy for years, evolving deleterious gases into the dwellings with which the drains are connected.

No. 2 consisted also originally of a watery solution of fresh beef juice, but to which had been added a small quantity of dilute hydrochloric acid. By this means, fermentation was induced in the mixture. This process is different from putre-faction. A putrefying fluid is opaque, fœtid, teems with bacteria, and, for a comparatively lengthened period, continues to putrefy, and to respond to albumen tests. But if fer-mentation has been induced in the fluid, it remains clear—indeed, becomes clearer; has no fœtor, but instead a slight musty odour; has no bacteria, but instead has a few or numerous wisps and filaments of fungi; and in a comparatively short time ceases to ferment and to respond to albumen tests. The inference to be drawn from these facts is, that by adding a small quantity of hydrochloric acid to a fluid containing putrescible matter, fermentation can be produced and putre-faction prevented at will, the former process being devoid of the repulsive odour of the latter, and the fluid reduced more rapidly to its lowest states of chemical combination. It may be added that a larger quantity of hydrochloric acid added to the putrescible fluid prevents both fermentation and putrefaction.

No. 3 was a flask containing some urine which had simply been boiled, and the neck of the flask stuffed with cotton wool during ebullition. The urine, now less than half its original bulk from evaporation through the cotton wool, was of a deep amber tint, but transparent, and showed no signs of decomposition, the air, which has access to the urine, being filtered through the wool. The black dust with which the wool, projecting a little beyond the neck of the flask, was covered, was found under the microscope to consist of amorphous debris, such as gathers on books, shelves, &c. This specimen showed very conclusively that it was not the air, but what the cotton wool had filtered from the air, that causes putrefaction, as even boiled urine, if exposed to the air in the ordinary way, putrefies in a few days.

No. 4 consisted originally of a quantity of putrid beef juice, but on a small quantity of hydrochloric acid being added to it, the mixture in about two days lost its fœtor, and became instead odoriferous, which it still was to a slight degree. The odour resembles that of hawthorn blossom or *spiræa ulmaria*. This curious fact suggests a wide range of practical application in rendering fœtid bodies odoriferous.

II.—STRICTURE OF THE URETHRA.
By Dr. W. J. Fleming.

Dr. W. J. Fleming read a paper on Stricture of the Urethra, which will be published in our next number.

Dr. Miller could corroborate what Dr. Fleming said about cocaine. He had a case recently of spasmodic stricture in which he had tried cocaine, and the patient was now able to pass water without any instrument.

Dr. James Hamilton said that Dr. Fleming's paper brought a case to his mind that came under his notice some months ago. This patient called late at night, and although he, Dr. Hamilton, made it a rule not to pass an instrument into the bladder in his own house, he departed from his use and wont on this occasion. He first tried what instruments he had at hand, two or three soft ones, then he tried to pass a No. 7 probe-pointed catheter but failed. He then left the room to look for another one, leaving the patient in the room with the No. 7. When he returned he found that the patient had himself passed the catheter into his bladder. Dr. Hamilton did not understand what was meant by a solid soft instrument.

Dr. Macpherson asked if anything like catheter fever had been observed ?

Dr. Parry said that Dr. Macewen had excised a stricture of the urethra with good results. He (Dr. Parry) had examined the urethra in many cases *post-mortem* for stricture and had failed to find any stricture, though during life the patient had been the subject of it.

Dr. Pollok noted the small quantity of solution of cocaine (20 drops of a 5 per cent solution), which was sufficient to anæsthetise the urethra. The only danger of the soft instruments is the possibility of fracture. When these instruments lie long in one's consulting room they become brittle and very liable to fracture.

Dr. Fleming replied. As to the patient passing his own instrument, he had a patient with a very bad stricture in which no one but the patient could pass it. In speaking of a solid soft instrument he meant one in which there was no opening at the point, and the principle was to prevent the admission of air into the bladder. He did not mean that the instrument was actually solid. As to catheter fever he could not say that he ever saw it, except fever from a catheter. He believed it to be always due to septic infection. As to not seeing strictures at *post-mortems*, he had tried to find them often. He had even examined the urethra *post-mortem* of a

person, whom he knew had a stricture, and did not find it. As to the method of passing a catheter, the best is the one taught by Lister when he was a student, and that is that when the penis is in the erect position the urethra is in a straight line with the triagular ligament. As to Dr. Pollok's remark about the use of cocaine, he thought it best to use the minimum quantity to produce the required result. To economise the drug he has used a long narrow tube attached to a syringe, and injected it into the deeper part of the urethra. As regards the instrument beginning to curl or turn back in the urethra, the only indication is the operator's experience of the use of the instrument.

REPORTS OF HOSPITAL AND PRIVATE PRACTICE.

PRIVATE PRACTICE.

Reported by J. GRANT ANDREW, M.B., C.M.,
Resident Assistant, Victoria Infirmary.

NOTES OF A CASE OF OBSTINATE VOMITING CURED BY SKIM MILK AND ARSENIC.—When taking the place of Dr. Blair, in Shotts, I had an opportunity of seeing and treating a case of very obstinate vomiting in a young girl aged nine. For several months vomiting was a daily occurrence, but lately increased so much as to be almost after every meal. She experienced no pain, and very little inconvenience. The vomit was simply that of her food, sometimes, however, frothy and yellow, but never coffee-coloured as to suggest hæmorrhage. After vomiting she felt hungry, and if anything was taken, some little time elapsed before it was expelled. Bowels were regular, though loose seldom to the extent of diarrhœa. Tongue clean.

Physical examination of the abdomen revealed nothing abnormal. No pain on pressure, no enlargement of liver or spleen; if anything, slight dilatation of stomach. Pulmonary and cardiac systems normal. Child to appearance was healthy, florid expression, not by any means emaciated; in fact, a healthy looking country child.

No neurotic history could be made out from the parents, nor were any neurotic symptoms manifested in the rest of the family. The mother, however, was very much troubled with flatulence, and was very easily made sick. Even the recollection of some disagreeable sight or food made her vomit.

For the treatment of the condition in the child numerous remedies were tried, and alterations and suggestions made in her diet. Bismuth, rhubarb, sodium, and other stomachic sedatives were tried, but without much help. *The diet was then limited entirely to skim milk, and two drops of liq. arsenicalis* were given thrice daily after the milk. The vomiting immediately ceased, and several days after she managed to retain a little beef tea and dry toast, and now feels as if she were able to take the round of the house.

ABSTRACTS FROM CURRENT MEDICAL LITERATURE.

EPIDEMIOLOGY.

By A. K. CHALMERS, M.D., D.P.H. Camb.

The Disinfecting Action of Steam.—From researches by Von Esmarch on the action of steam as a disinfectant, it appears that the effects in relation to the destruction of bacteria depend not so much upon the temperature as upon the degree of saturation. If there is air with it, the power of destroying organic germs is very much diminished. Experimenting on the spores of malignant pustule, he found that while superheated steam, which was not in a condition of saturation, at a temperature of 120° C., was unable to destroy the spores in half an hour; saturated steam at 100° C. destroyed them in from five to ten minutes.

Report on the Atmosphere of Certain Buildings in New-castle-on-Tyne.—Prepared for the North-Eastern Sanitary Inspector's Association, by P. Phillips Bedson, D.Sc., and others. The methods of investigation adopted by this committee were both chemical and bacteriological ; and their results are classified under both headings. The chemical investigation included an estimation of the amount of CO_2 present, and also an approximate estimation of the amount of *organic* impurity. This latter depends on the amount of oxygen absorbed from a solution of potassium permanganate by a known volume of air. Regarding the carbonic acid present, Dr. Chammont's standard of permissive impurity was taken—viz., 6 vols. per 10,000, and the amount was estimated by Pettenkoffer's method. In the bacteriological examination, the methods of Hesse and Dr. Percy Frankland were both adopted ; Hesse's method, when the air was comparatively still ; Frankland's where draughts were present. The number of bacteria and moulds are stated per 10 litres of air, and their relation to each other is given. The main conclusion derived from these investigations is that in crowded rooms natural means of ventilation are ineffective to maintain the air in a state of purity, and should be supplemented by mechanical methods.—(*Sanitary Record*, December, 1889.)

On the Ventilation of Schools. By Sir Henry E. Roscoe, M.P. —This lecture was delivered before the College of State Medicine last year. It is largely a review of the recent investigations into the condition of the air in buildings under various systems of ventilation, and extended reference is made to the paper laid before the Royal Society by Professor Carmelly, con-

taining the results of the investigations which he conducted along with Messrs.
Haldane and Anderson.

The lecture itself should be referred to for the many points of importance
which these investigations have brought within our knowledge ; but one of the
tables may here be quoted by way of illustrating the extremely insanitary
conditions under which most schools exist :—

TABLE SHOWING THE GENERAL STATE OF PURITY OF THE AIR IN VARIOUS
CLASSES OF BUILDINGS.

	BEST.		AVERAGE.		WORST.	
	One-room House.	School.	One-room House.	School.	One-room House.	School.
Space per person, .	528	427	212	168	104	56
Carbonic acid, . .	1·7	4·4	6·6	15·1	16·5	34·3
Organic matter, . .	...	...	6·2	7·8	26·3	31·4
Micro-organisms, .	6	8	6	152	240	600

It is thus shown " that the one-roomed houses—by which is meant a room
in which one family lives—bad as they are, are well-aired places in comparison
with some of the schools."

Many other tables of equal importance are given, and the conclusion arrived
at is similar to that in Dr. Bedson's report above noticed—viz., that mechanical
methods of changing the air of schoolrooms is an absolute necessity if a con-
dition even approximating to purity is to be maintained.

Leprosy : A Review of some Facts and Figures. By Phineas
S. Abraham, M.D., &c.—This is an admirable epitome of the most recent facts
regarding the alleged spread of leprosy. The conclusions alone may be
quoted, viz. :—

" There appears to be little doubt that the disease is really spreading in
South Africa, that it is slightly increasing in the West Indies, and that it
certainly is not decreasing in India. It is also beyond all question that
Europeans who sojourn in the affected countries are occasionally liable to
contract the disease. In Hawaii laws for the compulsory isolation of lepers
are being talked of, or are already passed."

1. Is leprosy caused by the bacillus ? This is found in all leprous deposits,
but according to most observers we cannot, readily at any rate, cultivate it or
inoculate it into other animals. Further confirmation of the more recently
reported successful inoculations is needed.

2. Is the disease communicable from person to person ? At the present time
the wave of medical opinion is on the uprise in favour of its communicability.

3. Is segregation justifiable ? This has been partially adopted in Norway ;
and, as it did in the olden time, it has well succeeded in checking the course
of the scourge ; also in Canada ; but it has, so far, failed in the Sandwich
Islands.—(*Transactions of the Epidemiological Society of London*, Session
1888-89.)

MATERIA MEDICA AND THERAPEUTICS.

By C. O. HAWTHORNE, M.B., C.M.

Cactus Grandiflorus in Heart Disease.—Dr. Orlando Jones
draws attention to the value of this drug in certain abnormal cardiac con-
ditions. Contrasting its physiological action with that of digitalis, he finds
that, whilst the latter drug tends in the later stages to depress the vagus and

to exhaust the intrinsic cardiac ganglia, the final effect of the cactus grandi-
florus is exactly the opposite of this, leading, therefore, to increased cardiac
force and to improved circulation. Hence, he concludes that, whilst digitalis
is chiefly useful in sthenic or over-stimulated conditions of the heart, cactus
grandiflorus is specially applicable as a remedy in asthenic cardiac states. Dr.
Jones supports his contention by a number of cases, details of which will be
found in his paper.—(*Brit. Med. Journ.*, 11th January, 1890.)

The Action of Arsenic.—The statement so frequently made, that
patients taking arsenic acquire a fondness for the drug, and are unable to leave
it off, is, Mr. Jonathan Hutchinson states, quite contrary to his experience.
He finds, indeed, that patients usually complain of the effects of the drug, and
are glad to leave it off, experiencing an improvement in general health when
they do so. Whilst allowing that in small doses arsenic may have some slight
tonic influence, he maintains that in doses above the smallest it produces peri-
pheral neuritis, and other effects on the nervous system, diminishing the vigour
of the patient, and making him apathetic and uncomfortable. Further, Mr.
Hutchinson contests the popular belief that arsenic improves the complexion.
On the contrary, he finds that it makes the skin dry and earthy, and the eye
dull. He publishes two cases in which severe herpes followed the administra-
tion of arsenic. In another paper, on the treatment of eczema, Mr. Hutchinson
expresses his belief that the internal administration of arsenic rarely does any
good in this disease, and indeed often irritates. He regards tar, *properly
diluted*, as almost a specific for the eczematous type of dermatitis.—(*Archives
of Surgery*, Nos. 1 and 2.)

Counter-Irritation in Hooping-Cough.—Dr. Inglott, having during
a recent epidemic of hooping-cough of a severe type in Malta, found but slight
effect from the administration of various sedatives, applied strong counter-
irritation over the pneumogastric nerves, between the mastoid process and the
angle of the lower jaw. His experience leads him to highly recommend this
treatment.—(*Brit. Med. Journ.*, vol. i, p. 885, 1889.)

Antifebrin as a Hypnotic for Children.—This substance has been
found by Dr. John Gordon extremely useful in numerous cases of insomnia,
especially when this condition has complicated bronchitis, pneumonia, &c., in
children. It may be given in doses of from 2 to 5 grains, and when mixed
with sugar, and placed on the dorsum of the tongue, is easily administered.
The sleep produced is not preceded by excitement, nor is it followed by any ill
effects. The drug further has the advantage of lowering the temperature, and
showing the pulse and respirations.—(*Brit. Med. Journ.*, 4th January, 1890.)

Hæmoglobin in Anæmia.—In Merch's *Bulletin* for September, 1889,
the use of hæmoglobin as a method of giving iron in anæmia, &c., is advocated.
The medicine has been tested in several of the Paris hospitals, with very good
results. It may be administered either in solution, in water or wine, or in
pilular form, some volatile oil being added to conceal the odour. The dose is
1 to 2 drams daily.

The Therapeutics of Nutmeg.—Dr. J. O. Shoemaker considers the
medicinal properties of the nutmeg are much undervalued. He regards this
drug as highly serviceable in insomnia and in delirium tremens, its use being
unattended by the risks attached to opium, chloral, &c. The adult dose is
10 to 120 grains. Dr. Shoemaker has also found the nutmeg a useful remedy
in the summer diarrhœa of children, and, mixed with tannic acid and lard, he
recommends it as an excellent application to irritable hæmorrhoids.

Memoranda.—Mr. Chowdhorry, from his experience in the Burdwan
Hospital, recommends perchloride of mercury as a remedy for dysentery. He
quotes cases in which 5 minims of the official solution were given every four
hours with marked benefit.

The report recently furnished to the Prussian War Ministry recommends the application of chromic acid in the treatment of sweating feet. After thoroughly washing and drying the feet, a 5 to 10 per cent solution of the acid, in water, should be applied by a camel-hair pencil.

Mr. Jonathan Hutchinson, in the last number of his *Archives of Surgery*, quotes several cases in which comparatively large doses of tincture of nux vomica were accidentally taken, and notes that in no case was muscular twitching produced. The patients felt " dull and heavy," but otherwise experienced no ill effects. Indeed, in one case in which a 40 minim dose was repeated thrice daily for four days, the patient felt " wonderfully better for it." Mr. Hutchinson considers the tincture of nux vomica as the best of all tonics, and far more safe and convenient than any solution of strychnine.

DISEASES OF THE EYE.

By FREELAND FERGUS, M.B.

Dr. George Stevens, of New York, has, in the December number of *Knapp's Archives*, published another of his very important papers on

Anomalies of the Ocular Muscles.—In the first part of the paper he deals with exophoria, or a tendency of the visual axes outwards. Such a condition closely corresponds to Von Graefe's insufficiency of the internal recti muscles. Exophoria may be present for distant vision or only for near, or there may be, in addition, a tendency to deviation upwards of one eye (hyperphoria). Our author by no means admits the insufficiency theory, and states a few remarkable cases in which, with a natural tendency to convergence, the patient had exceedingly poor converging powers.

The chief subjective symptom in this condition is asthenopia, but other neurotic manifestations may also be present.

The treatment advocated is to exercise the patient for a lengthened period with prisms. He says : " Prisms of gradually increasing strength, and with bases out, should replace each other in rapid succession until the full extent of the patient's ability to overcome and unite images at 20 feet is reached. Again and again the process is renewed during three or four minutes at a sitting."

As to correcting prisms—*i. e.*, with base inwards—we are surprised to find that they afford relief only in a very small proportion of cases. A radical cure can in many cases only be effected by a careful tenotomy, or by a tenotomy combined with resection or contraction of the internal rectus tendon.

These operations are most elaborately described, and his method of performing them ought to be studied by all operators. On one point Dr. Stevens is very strong. He insists (and we think very rightly) that no operation should be undertaken unless the surgeon has thoroughly acquainted himself with the values of all the muscles for near and distant fixation.

The latter part of the paper is taken up with " some considerations respecting the deviations of strabismus and their treatment." The chief value of this portion of his contribution seems to us to lie in the emphasis which the author places on a proper examination of all cases. The first thing to be done is to establish diplopia where it does not already exist ; then to measure it carefully with prisms. This method he prefers to any other, for by it alone can the divergence or convergence of the visual axes be ascertained with any degree of exactness. Should the strabismus be so severe as to require very strong prisms, then the squint may be partially corrected before the measurements are made.

Wherever we have lateral deviation, there also are we likely to have vertical. This matter should also be most carefully investigated. For lateral deviation is often, in part at least, only apparent, depending on vertical, and can only be fully corrected when the vertical is corrected.

Although not agreeing with Dr. Stevens in all that he says, especially as to the cure of epilepsy by tenotomy, yet we would like very much to see these important papers published in a special volume.

Value of Retinoscopy as a Means of Estimating Refraction. —Schweigger, of Berlin (*Knapp's Archives*, December, 1889), sums up the value of retinoscopy, or, as he calls it, *the illumination test*, as a means of estimating the refraction. He takes it, for the most part, as a competitive method to estimation by the *direct image*. Both methods are based upon the law of conjugate foci, and the question is, which is the most serviceable. The conjugate of the retina of an emmetropic eye is at infinity, while that of a myopic is at a less distance, and that of a hypermetropic may be regarded at a distance greater than infinity—*i. e.*, the emergent pencil diverges.

Schweigger uses a plane mirror, which, in myopia of course, causes the illumination in the eye to move in the same way as the rotation of the ophthalmoscope. He prefers to measure the refraction by the distance from the eye at which the image turns, from a movement contrary to the mirror, to that in which it moves with it. Should the retinal conjugate not lie between 24 cm. and 36 cm. from the eye, it can easily be made to do so by appropriate lenses.

Unquestionably, when first seeing a patient, the illumination test affords us, more quickly than any other, an idea as to the nature of the case with which we are dealing.

Cataract Extraction followed by Death.—Dr. David Webster, in *Knapp's Archives* for December, 1889, records one of the few cases in which cataract extraction has been followed by death. The details, as given, leave us in doubt as to whether this event was not rather a coincidence. The autopsy revealed œdema of the lungs and brain, and atrophy of the kidneys.

Case of Lenticonus Posterior.—Dr. Knapp puts on record a case of lenticonus posterior. By that is meant an ectasia on the posterior surface of the lens, composed of lens substance. Only some four cases have been described, but Knapp thinks that such anomalies are probably not so rare as this number would indicate. For details as to the method of diagnosis we would refer the reader to Knapp's paper. It is interesting to note that there was no posterior polar cataract. Such conditions our author regards as stationary and congenital.

The Pathology of Divergent and Convergent Squint was the subject of this year's Bowman Lecture, and the lecturer was Dr. Hansen Grut, of Copenhagen. A carefully written abstract from the author's pen appears in the *Ophthalmic Review*.

In the first few paragraphs he calls special attention to the fact that habit and exercise, to a large extent, control the movements of the eyes. To understand the origin of squint, it is of importance to study (1) "the position of normal eyes on fixation of a distant object;" (2) "the position of ametropic eyes on fixation of, and accommodation for, a near object."

I.—In studying the first subject, our author is anxious to determine what is the *anatomical position of rest*. By this is meant the position which the eyes would assume if both eyes were open and the balls left perfectly free to move in any way they chose apart from the patient's efforts at vision. The *functional position of rest* is that position which the eyes assume when the patient looks at a great distance. Hansen Grut, along with Landolt and Schneller, believes that the anatomical position of rest is one of divergence.

The important points of evidence are three in number :—(*a.*) In deep sleep and narcosis the eyes diverge as a rule. (*b.*) Generally after death there is also divergence. (*c.*) When one eye is blind, if parallelism is not maintained, there is divergence.

II.—In discussing ametropic eyes while accommodating, it is pointed out

that in emmetropia the relation between the metre angle and the accommodation expressed in dioptrics is, as a rule, normal. That is, an emmetrope converges for the point on which he is accommodating. On the other hand, when the relationship between the two functions is normal in myopia and hypermetropia, then there would be divergence in myopia and convergence in hypermetropia. These tendencies are overcome by the effort of the individual; and where they are not overcome, it is because the individual can make no effort.

To put his views in a nutshell, we may quote the two following paragraphs :—

" Convergent squint originates in, and is maintained as, the result of an innervation, which induces in the interni a shortening exceeding in amount that which is desired. When this abnormal is temporarily or permanently suspended, the squint disappears. We must, therefore, renounce any idea of structural muscular change."

" Divergent strabismus is the expression of a relaxation of convergence innervation, which permits of the eye taking up its anatomical position of rest. It can, therefore, in the absence of any paresis or abnormal condition of the muscle, only arise when the anatomical position of rest is a divergent one."

The rest of the paper is, for the most part, taken up with an application of the author's views to the various forms of squint. In the main he agrees with Donders. Dr. Grut would abolish the term muscular insufficiency, as he believes the primary cause is the innervation. He does not believe in muscular shortening, for the following reasons :—

1. " It has never been demonstrated anatomically."

2. " It is not in accordance with the fundamental laws of squinting."

3. " It is not in accordance with the temporary cessation of squint (narcosis, &c.")

4. " The spontaneous disappearance of squint renders it improbable."

Books, Pamphlets, &c., Received.

On the Pathology and Treatment of Diseases of the Skin, by J. L. Milton. Third Edition. London : Henry Renshaw. 1890.

Asthma, considered specially in relation to Nasal Disease, by E. Schmiegelow, M.D. London : H. K. Lewis. 1890.

Egypt as a Winter Resort, by F. M. Sandwith, F.R.G.S. London : Kegan Paul, Trench & Co. 1889.

The Flowering Plant, as illustrating the first principles of Botany, by J. R. Ainsworth Davis, B.A. With numerous Illustrations. London : Charles Griffin & Co. 1890.

Introduction to the Treatment of Disease by Galvanism, by Skene Keith, M.B., F.R.C.S. Ed. London : Truslove & Shirley.

Spinal Concussion, Surgically considered as a cause of Spinal Injury, &c., by S. V. Clevenger, M.D. With 30 Wood Engravings. Philadelphia and London : F. A. Davis. 1889.

The Medical Annual and Practitioner's Index, 1890. Eighth Year. Bristol : John Wright & Co. Glasgow : A. Stenhouse.

The Natural History of Specific Diseases, by Edward F. Willoughby, M.D. London : H. K. Lewis. 1890.

Wanderings in Search of Health, by H. Coupland Taylor, M.D. With Illustrations. London : H. K. Lewis. 1890.

ORIGINAL ARTICLES.

ACCOUNT OF A MS. VOLUME, BY WILLIAM CLIFT, RELATING TO JOHN HUNTER'S HOUSEHOLD AND ESTATE; AND TO SIR EVERARD HOME'S PUBLICATIONS.

(*In the Library of the Faculty of Physicians and Surgeons, Glasgow.*)

By JAMES FINLAYSON, M.D.,

Honorary Librarian to the Faculty of Physicians and Surgeons, Glasgow ;
Physician to the Glasgow Western Infirmary, and to the
Royal Hospital for Sick Children, Glasgow.

In 1886 the late Dr. W. A. M'Kellar, who was long well known in the West Coast of Africa, presented me with a MS. volume of considerable interest. It is in the handwriting of William Clift, the faithful curator of John Hunter's Museum. The volume relates partly to John Hunter's financial affairs, after his death, and partly to Sir Everard Home's transactions and difficulties with various publishers. When I obtained the volume I hesitated as to whether I should give it to the Royal College of Surgeons in London,

as the guardians of John Hunter's work, or whether I
should put in the Library of the Faculty of Physicians and
Surgeons of Glasgow, which was under my own care. I
could not make up my mind to send this little relic from
Glasgow, especially as we claim in Glasgow a pretty close
connection with the Hunters; although, no doubt, more
especially with William Hunter. I thought, however, that
some account of this volume in our Faculty Library might
be of interest to the numerous students of John Hunter's
life. The authenticity of the volume may be judged of not
merely from the nature of its contents, but also from the two
pages here reproduced by photo-zincography. Mr. Bailey,
the librarian of the Royal College of Surgeons in London,
kindly compared these, at my request, with Clift's writings
in his possession, and he found the similarity complete.

The question naturally arises—How and where did Dr.
M'Kellar obtain such a volume ? Shortly before his death
he made, at my request, the following memorandum, which
was gummed into the volume :—

" In 1872 I was resident at Free Town, Sierra Leone. In the
autumn of that year the Company of African Merchants, repre-
sented by Mr. Brodie, gave up their trading establishment in the
town. In the course of removing their property a heap of old books
was brought together, and from it Mr. Brodie kindly permitted me
to select what I wanted. Most of the books were cheap reprints of
popular novels, but amongst these I found this manuscript volume.

.   .   .   .

" I may add that Mr. Brodie had no idea how the MS. book had
found its way into his establishment.

W. A. M'Kellar,
3 April, 1886."

The volume opens with $3\frac{1}{2}$ pages of preliminary matter, as
it were. The first two of these are reproduced here by a
photographic process, to represent exactly their appearance ;
the next page and a half are printed here in full, and follow
the *fac simile*.

In the Year 1792 Mr Hunter's Family con-
-sisted of the following Number of Persons:

In Leicester Square.

1. John Hunter Esqr. F.R.S.
2. Mrs Anne Hunter, his Wife; elder Sister to Everard Home Esq.
3. John Hunter the Son; from St John's College, Cambridge.
4. Agnes Hunter the Daughter; (Now Lady Campbell.) —
5. Everard Home Esqr. (afterwards Sir Everard Home, Bt)
6. Thomas Nicol. Esqr, — Son of the Revd Dr Nicol, Articled Stud.
7. Dr Edward Bradley, of Alresford, Hants. House Pupil. 1 year.
8. Mr Francis Kinloch Huger. N. Carolina. — Do — 1 yr
9. Mr James Smith, of Ecclefechan. N. Britn Do — 1 yr
10. Mr Henry Jenner, Nephew of Dr Jenner, Berkeley. — 1 yr

Servants.

11. Robert Adcock, Butler, (after Mr Dewell.)
12. Ann Martin, from Southampton. House Keeper.
13. Elizabeth Roby. from Rochester. Lady's maid.
14. Mr Hunter's Coachman, Joe. . . . .
15. Mr Hunter's Footman, John. . . . . .
16. Mrs Hunter's Coachman, James Goodall.
17. Mrs Hunter's Footman, — George Smith.
18. Mary Edwards, from Llanbeder; Cook & ann Denny } Do
19. Martha Jones. ———— House maid :
20. Little Peggy. ——— Do ———— a great laugher.
21. Mrs Long. ——————— Constant Needlewoman.

In Castle Street House.

22. Robert Haynes. Dissecting room and Lectures.
23. Elizabeth Adam. ———— House, & Door-keeper.
24. William Clift. Museum, & Amanuensis.

At Earl's Court, Kensington.

25. Peter Shields ——— Gardener.
26. Mrs Shields ——— Housekeeper & dairy Woman.
27. Betty . . . . . Laundry-maid. Butter would not melt in her mouth — but some how she became enceinte by an equally bashful Kensington Sweetheart.

At Earl's Court, continued. Out-Door Servants.

28. Tom Barton, Carter.
29. Scotch Willie. Half witted. Employ'd in the Fields.
30. Old David, Head Under-Gardener, Hothouses &c.
31. Alexander .... Out-door Gardener, & Spring Guns.
32. Woman to Weed in Garden, & fetch the Cows.
33. Tom Barton's Wife, Assistant Laundress.

34. Monsieur St. Aubin, Draughtsman, in House 1 year.
35. Mr. Dupré Secretary for Surgeon & Inspector Genl.
36. Mr. Walker. Teacher of Elocution to John.

Out door Tradesmen nearly Constant employ.

37. Sawyer Carpenter in London.
38. ...... Carpenter, at Earl's Court.
39. Piper. Bricklayer & Mason, Earl's Court.
40. Benjamin Harris. Blacksmith Castle Street.
41. Jno. Weatherall, Cabinet maker & Joiner, Upholsterer.
42. Painters & Glaziers. Hot & Green houses.
43.⎫ Printers, nearly constant in Castle Street.
44.⎬ John Richardson, Compositor. Long ..... Pressman.
45.⎭
— Mrs. Hunters' Livery-Stable Keeper. Mr. Rand, Golden Sq.
— Cart, Harness, and Collar-maker. Earl's Court.
— Farrier. nearly Constant, from Under-ground Stable.
— Stewardson, an old Butler, a constant Visitor.

From the above List, which is but Imperfect, and Several of
the Master Tradesmen sending Two or more men; besides
occasional helpers to the Coachmen, Gardeners, and
in the Grounds, Viz; there were never fewer than 50
persons daily provided for at Mr. Hunters' Expence,
exclusive of the House-Pupils who paid for their Board.

Wm. Cliff

"Notwithstanding the very large eating and drinking establishment on the preceding Pages; and the Host of Tradesmen employed, as the Bills hereafter enumerated will show; together with the large outstanding Debts; and money borrowed at Interest, of Gawler; old Mr. Clarke, Cutler, of Exeter Change ; of Hannah Apperley ; of Mrs. Home; &c., and the great expense of increasing and supporting the Museum, and the large Prices he gave for individual Preparations ;—and the large sum he expended in Building the stabling, Conversatione and lecture room, and Museum over them, with an immense Sky-light over the yard to protect the Whale's Skull—of perhaps 500 superficial feet of Glass—with Entrance Galleries &c. —and the expensive but ineffectual *Empyreal* warm Air-Stoves by Jackson & Moser—with the Great Draw-bridge and slope made to let the Chariot down from the Street, and consequent necessary great alterations of the House, in Windows and Door-ways for that purpose,—at more than £6000,—on a lease of about Twenty years.— Notwithstanding the expence of keeping up two establishments of Coaches and 6 Horses, Coachmen and Footmen, &c. &c. ; Mr. Hunter was always on the look out for bits of Land adjoining to his previous possessions at Earl's Court :—and for Bargains ; many of them of *little* use, as an enormous Electrifying apparatus—a Splendid but unfinished Air Pump invented by the Earl of Bute, together with a grand Chemical furnace and apparatus by ditto—a magnificent and highly finished Turning Lathe which was made for the Great Duke of Cumberland ; several beautiful and large Pieces of Tapestry ;—Chinese Ivory puzzle-Balls : Armour of all sorts and kinds—an acre of Landscape and figures painted by Zucarelli as models for Tapestry, which covered the walls and doors of the Conversatione room ; as well as a very fine collection of proof prints by Hogarth, Strange, Woolett, Sharpe ;—of the latter artist several hundred pounds worth : besides Chinese Josses and beautiful nodding mandarines ; and several original Pictures by Zoffany, Vandevelde, Xuys, Ostade, Teniers, Stubbs, &c., &c.—The large number of Animals both tame and wild that were kept both in London and at Earl's-Court, which consisted not only of presents, but often considerably expensive purchases ; serve only to make one Wonder that Mr. Hunter had not died more deeply involved ; or that he should have left anything for the support of his family after all his Debts were liquidated."

After two or three blank pages we come to what seems the formal beginning of the volume with this entry only on the page :

JOHN HUNTER ESQ. FRS.

Surgeon General to the Army, and
Inspector General of Hospitals ;
Surgeon to St. Georges Hospital ;
Surgeon Extraordinary to the King ;
&c   &c   &c.

Died October 16, 1793—
On the same day, and perhaps hour,
that the unfortunate Marie Antoinette
Queen of France was beheaded in
Paris.

W. Clift.

With the next page, numbered as 1, the accounts begin. The first two pages are given as a specimen, in printed form, however :—

Dr.   Everard Home Esq.   Per Contra.   Cr.
      Acting Executor of the late John Hunter, Esq.

1793						1793	1	None (Old Bill) before Mr.			
Octr. 16	To Cash &c. found in the House	407	12					Hunter's death.			
	Note of Hand of Mr. St.George	52	10			Octr. 21	2	By paid Hannah Apperley .	21		
	Proof print . . .	2	2			20	3	Shields Gardener vide his			
	Lady Farnham . . .	73	10					book	19	10	
	Mr. Fowler	10	10			28	4	——, Half years Rent .	40		
	To a fee	2	2			30	5	House and Window Tax .	14	15	3
	Society, Lyceum Medicum .	25	4				6	Mrs. Hunter house ac-			
	Hospital Settled . .	114	16	6				count	31	10	
Decr. 3	Hitchins, Earl's Court Rent .	19	17	9		Nov. 6	7	Funeral expences—Wea-			
	Haspenall's Rent . .	12						therall . . .	74	10	
	Scotch Estate . . .	11	10			10	8	Gardener Peter Shieds			
	Mr. Walsh	5	5					vide his book . .	5	5	
	Mr. Tait a fee . . .	15				8	9	Probate of Will . .	26	18	6
	Mr. Baker do. . . .	2	2			12	10	Messrs. Huger, Smith & Co.	275	14	
	Col. Paris Swords (Pimlico) .	2	2					(money refunded to House			
	Found with Memorandum)							Pupils)			
	about Miss Apperley's £800 }	52	10				11	A box	1	11	
	(intended to pay off))						12	House account . .	10	10	
	Mr. Brande, a fee . .	1	1			Nov. 20	13	Land Tax . . .	3	2	2
						Oct. 21	14	Mrs. Hunter Lodgings at			
								Brighton . . .	32	14	
						Nov. 23	15	Charles Callard for News-			
								papers . . .	1	6	8
						Decr. 3	16	House and Window Tax .	22	2	
							17	Mrs. Hunter, Servants			
								Wages . . .	15	15	

The accounts go on in this way to page 46, and both on it and on page 21, there is a general summation, after adding "Ballance of Mr. Booth's acc^t closed May 23rd, 1808:"

				£	s.	d.
Dr. side Brot. forw^d.	.	.	.	20418	0	$5\frac{1}{2}$
Cr. ————————	.	.	.	18849	11	6
	Ballance, .		.	£1568	8	$11\frac{1}{2}$

On page 21 we read:—

This is the last Corrected ⎫
Account which was delivered ⎬
May 26th, 1808.— ⎭

> N.B.—The above Mr. Booth was an Attorney who superintended the sale of Earl's Court, &c. and was a long time before he could be brought to book under various pretences for delay— as, his not being able to get the money from Mr. Bain, and other Purchasers of Lots, of Fields &c., &c. &c. He resided in Craven Street, Strand. See his Bill No. 279.
>
> > Full many a time did I after him trot,
> > And nought but an unsatisfactory answer I got.
>
> W. C.

An examination of the Accounts seems to indicate that in this book we have merely a *copy* of the official accounts, for there are no summations at the foot of the pages, and on pages 3 and 4 we have such summations in very small figures:

To this—1st page 2618.14.0 and Large Acc^t 1st page 729.15.3.

The humorous annotation about Mr. Booth, just quoted, likewise points to the non-official character of the account book; for although the book bears evidence of subsequent additions, with points of exclamation in the same handwriting, but in a later and blacker ink, this passage seems to have been written at the time the entry referred to was made.

Various entries in the accounts have some interest. We find:

1794, April 16, Mr. Hunters pay as Surgeon General, £49.14.4
            Mr. Hunters pay as Inspector General, £546.9.6

Under the same date we find as received:

Gough for Vulture, . . 5.5.0 ⎫
        Sheep, . . . 10.10.0 ⎬ 31.10
(Wolf Dog?)   Great Dog . 15.15.0 ⎭ *or "Lion."*

The words " or *Lion*" are evidently added later, probably by
the same hand. About the very end of the entries of receipts
(p. 19) we find the following entry, but in the words " to Mr.
Home " and onwards, as also in the underlining of "appraised,"
and the point of exclamation, the ink is obviously different,
showing a later addition, almost certainly in Clift's hand-
writing however;

> To furniture in Sackville Street *appraised !* by ⎫
> Mr. Weatherall and Mr. Dawson to Mr. Home ⎬ 15 . 15 . 0
> (vizt. 3 writing Desks) worth 30£ or 40£.   ⎭

This addition is by no means a solitary instance in this
volume of the indication of a hostile feeling towards Sir
Everard Home on the part of the scribe.

Under date, 1800 Jan. 10, there is an entry of some
interest.

> Transferred as the Ballance of the Money paid ⎫ 1615 . 1 . 0
> by Gov^{t.} for Mr. Hunter's Collection   ⎭

Entries in the receipts include numerous Exchequer Bills,
various sums for sales by Mr. Christie, Pall Mall, Mr.
Weatherall for " sale in Leicester Square," " Purchase money
from Bain's Lots," payments from booksellers, and other
similar entries, which probably are not of much interest now.
At pages 75, 76, an account is given of the estimates for the
various lots at the sale of Earl's Court, 28th May, 1794, with
the biddings and the sums received. The following note
appears on page 75—the underlining, the points of exclama-
tion, and also the last six words are apparently added later,
by the same hand.

N.B. Lot 5 was bought in by Mr. Norris but no doubt of fetching
the sum of 1186 . 10 . 0 or upwards.
    Mr. Norris's Valuation on the whole of the Premises
at Earl's Court when he met the Executors was
£10,300 . 0 . 0. Mr. Christie's estimate was £9,700.
    It has *happened* that the amount of the Sales,
(including Lot 5) has *just* amounted to Mr. Norris's
Estimate.—— ! ! ! A good Judge, *if no Collusion.*—

On the Cr. side of the Accounts we have Exchequer Bills,
the repayment of various loans to Gawler, Mr. Home, Hannah
Apperley, and Mr. Clarke. On March 31, 1800, there is the
entry of £524 . 0 . 9 repaid to Mr. Coutts, who had lent £500
to the executors on Jan. 29, 1799.

Of special interest is the entry of

> 1794, Oct. 8. Mr. Sharp, Engraver   £50.
> (for the small Head of Hunter to
> the Work on the Blood).

There is much interest also in the following :—

> 1795 Decr. 30. Willm. Clift   First Wages. } 5 . 5.
>   at £21 . 0 . 0 a year

The words between the name and amount are clearly a later addition by the hand of Clift.

The humour of the writer comes out again in the last entry, although the underlining, the points of exclamation, and the words following these, are apparently subsequent additions.

> April 1808 Mr. Weatherall *for various attendances*
>   *and receiving the Rent Six years ! ! !* What } 1 . 1.
>   you please ! Symptoms of Liberality ! !

A few pages of the MS. volume are occupied with statements of the stocks and of the sale of Hunter's works. So far as I can judge, there are no points of special interest in these.

From page 80 to 150 we have "Account of Sir Everard Homes Publications with G. & Wm. Nicol Pall Mall, 1817." In addition to accounts, there is much correspondence, some of it amusing enough, but scarcely worthy of reproduction. The letters do not reflect much credit on either publishers or author; and Mr. Clift's annotations, and points of exclamation, seem to indicate throughout a hostile feeling to Sir Everard Home. After much trouble the transfer of publishers was effected, as shown by the following note :—

The whole of Sir Everard's works, great and small were then delivered up to me as stated in page 137, and immediately Carted across and delivered to Messrs. Payne and Foss, Booksellers. Pall Mall, July 12th, 1817.

Thus ended all communication with Messrs. Nicol ; and W. Clift's consarn with the works.

The concluding entry in the volume is regarding Everard Home's works, and it again shows Clift as a humourist :—

Mem. by W. Clift.
In 1822, Messrs. Payne and Foss being *too polite* to pay any attention to advertising or encouraging the sale of the work, they were no more successful than poor Mr. Nicol ; and moreover stating

that *such works* were not exactly in their line of Bookselling, *the whole* once more took a trip (like the Temple of Loretto) to Messrs. *Longman, Rees, Hurst, Orme*, and *Brown*, Paternoster Row ; and had *each* partner *taken a copy* and paid for it, it would have been a good lift.

They were also uncivil enough to refuse to undertake the printing of the 3rd and 4th volumes at *their* risk, but consented to *publish*, after Sir Everard had paid for the Paper, Printing, and altering and Printing the Copper Plates. So that they— God-rot-'em—are no encouragers of *Book making*, after all.

I think this short notice may suffice : it is possible that some hitherto obscure points in John Hunter's or Everard Home's affairs might be cleared up by the entries or corres- pondence ; but I have indicated the nature of the volume sufficiently for this to be judged of by others.

ON THE PATHOLOGY OF ACUTE AND CHRONIC BRONCHITIS AND BRONCHIAL ASTHMA.

(Continued from page 101.)

By A. G. AULD, M.D.

II. Acute Bronchitis.

(Illustrated.)

Having examined in some detail the normal structure of the bronchi, and, as I trust, cleared up to some extent certain difficult and disputed points pertaining thereto, I shall now endeavour to represent the remarkable series of events developed in these organs in acute bronchitis, the progressive events, namely, which constitute the rise, progress, and issues of a catarrhal inflammation of the bronchial tubes. It is the more encouraging to attempt to do so, when it is found that, notwithstanding all that has been written on this subject, unquestionably the descriptions of the more minute changes have been either inadequately or inaccurately expressed, more especially those occurring in connection with the various epithelial elements, the basement membrane, and the peri- bronchial fibrous tissue. It is surely unnecessary to insist on the importance of a correct appreciation of the morbid anatomy and pathogenesis of a disease having such a great and such a calamitous frequency in this and other countries.

By bronchitis, as already mentioned, is understood a catarrhal inflammation of the bronchial tubes, howsoever induced. When such inflammation is slight, transient, and limited to the mucous membrane, it is usually spoken of as " catarrh " or " congestion." Though acute bronchitis may set in with varying degrees of severity, according to the nature of the irritant which induces it, and the resisting power of the organism, yet there is no essential difference in the phenomena so induced other than in the rapidity of their development.* At the same time, inflammation must not be confounded with the mere mechanical congestion following such diseases as interfere with the normal circulation in the lungs, or with the hypostatic congestion immediately preceding death in many cases. In such conditions, the mucous epithelium is always desquamated, owing to the œdematous state of the tissues underneath. Yet passive hyperæmia or congestion, long enough continued, may give rise to many of the appearances of a genuine inflammation, and no doubt may occasionally pass into such. It is doubtful whether *post-mortem* changes can effect desquamation of the bronchial epithelium, as Biermer supposed ; the evidence is against such a possibility. Bronchitis is spoken of as "idiopathic," or primary and "secondary ;" and, with reference to the catarrhal secretion, the terms mucous, serous, muco-purulent, purulent, &c., have been applied. These latter terms indicate, in a rather loose manner, the particular stages of the affection, and are clinical adaptations. The term *idiopathic* is rather misleading—it has no really intelligible signification, and had therefore better be abandoned. However, whether primary or secondary, there can be little doubt but that, in the majority of cases, a *poison* of some sort gains access to, and is distributed in, the blood-vessels and lymphatics of the mucosa. It may be inhaled from without, or it may be carried by the lymphatics or the blood-stream from centres of infection within, either in the form of schizomycetes, or as ptomaines, or it may exist, *in loco*, as part of a general infection of the system ; or, lastly, it is probable enough that it may be developed, *de novo*, by local conditions of faulty metabolism. The various exanthemata are fruitful sources of bronchitis. In

* As bearing on this, it must not be supposed that the condition known as plastic or croupous bronchitis, rare in man, but easily induced experimentally in animals, is necessarily a severe form of inflammation. In fact, as a rule, the very opposite is the case, and there is by no means that total destruction or coagulation-necrosis involving the epithelium, which Weigert rather ingeniously propounded to be indirectly the cause of the deposition of fibrin, by the consequent death of the white blood corpuscles —a view which, in the light of the facts, seems hardly sufficient.

these cases, as likewise in diphtheria, influenza, and hooping-cough, multitudes of micro-organisms have been demonstrated in the walls of the bronchi by Buhl, Eberth, Wyss, and others. In this group of cases, the inflammatory process is liable to become developed in the finer bronchi, as a result no doubt of the direct application there of the specific virus. In ordinary uncomplicated bronchitis, in adults at least, the inflammation is generally limited to the trachea and larger and middle sized bronchi, and termed tracheo-bronchitis ; in children the affection very frequently involves the finest bronchi when, *as a necessary consequence*, more or less catarrhal pneumonia is set up. It might be surmised that the inflammation in these instances had spread from the larger to the smaller tubes by mere contiguity. This may be possible enough in some cases, but it is certainly not so in all, for it looks as though specific agencies were at work. In fact, M. Pipping, working under the direction of Friedländer, has discovered, in certain cases of uncomplicated broncho-pneumonia, an organism exactly resembling the pneumo-coccus described by the latter. In some cases the organisms were encapsuled, and some of the capsules contained two or more cocci. Most of them existed as diplococci and streptococci. The subject of broncho-pneumonia will, however, come up for future con-sideration.

Although ordinary acute bronchitis in all its stages may, as to its morbid anatomy, with ease be studied in the human subject, yet a large number of experimental investigations have been carried out—chiefly by Continental workers. And bearing in mind the structural difference in the bronchi of man and those of the lower animals, by which I mainly refer to the presence in the former of the basement membrane, these experiments are not so much to be relied upon as illustrating the progressive development of the general process. Rather are they valuable as aids to the study of the changes in individual elements. Again, many of these artifically induced inflammations partake of the fibrinous variety. This seems to depend on the nature, degree of dilution, and length of time of the agent employed. Thus, as regards the irritant, the inhalation of hot steam (Heidenhain), or the injection into the bronchi of solution of ammonia (Reitz), or of perchloride of iron (Sommerbrodt), are followed by a fibrinous bronchitis ; while the injection of mercury (Cruveilhier), of vermilion or Berlin blue (Schottelius), or of a three per cent solution of chromic acid (Socoloff), gives rise to the catarrhal form. So far as I have observed, the results of experiment serve to

render clear certain of the more obscure phenomena observed in the human subject. But at any rate, with or without experiments, it is necessary to examine a large variety of cases, so as to obtain specimens illustrative of the morbid process in all its stages. And in the preparation of the specimens, much care is needed. After hardening the tissues for a few months, they should be subjected to the process of embedding—either in celloidin or in paraffin. This preserves with the greatest possible accuracy the relative positions of the elements, and the risk of injury in cutting the sections is reduced to a minimum.

I need not here describe the *macroscopic* appearances of catarrhal inflammation of the bronchi, as these, no doubt, are sufficiently familiar to every one. What, then, it may be asked, is the very first indication in the bronchus of the commencement of the morbid process? Such may readily enough be imagined, but it is not so easy as usually to permit of demonstration in man. Finding that the experiments referred to had exclusive reference to the more advanced changes, I had recourse to the following simple one:—I performed tracheotomy in a rabbit, and injected into the trachea a few drops of emulsion of oil of turpentine. In about twenty minutes I killed it, and excised the trachea and lungs. Microscopically, the blood-vessels ramifying in the mucosa were found to be immensely distended, and punctuate hæmorrhages were frequent. *The epithelium showed no change whatever.* The vascular engorgement was confined to the mucosa, it was not apparent in the adventitia (which usually contains a quantity of fat in most animals). From this it is apparent that bronchitis commences with engorgement of the vessels in the inner connective tissue layer, causing redness, tumefaction, and that irritating sensation experienced at the commencement of a catarrh. There seems to be little or no secretion of mucus at this stage; the mucous membrane feels hot and dry subjectively. Very soon, however, the exudation of corpuscular and fluid elements from the blood becomes energetic. The leucocytes tend to accumulate immediately underneath the basement membrane, and in the vicinity of the glands. As the transudation of fluid continues, the connective tissue interspaces become *more apparent*, the basement membrane becomes *highly œdematous*, and its straight and **Y** shaped canals become *distended*. Coincidently with these changes, the epithelial cells of the surface *swell*, and many ciliated cells *rapidly undergo transformation into goblet cells.* This is effected as follows:—The cilia are entirely or partially

thrown off *; the nucleus gets displaced to the extreme base;
the meshes of the intracellular network widen; while the
cell substance increases in amount, and undergoes a mucous
metamorphosis. The orifice of the cell then generally *dilates*,
the intracellular network *breaks up*, when the mucus issues
forth and immediately becomes cloudy, though it is clear
before its escape. In this way large quantities of mucus are
generated by the surface epithelial cells alone, while, at the
same time, it wells out in abundance from the ducts of the
mucous glands. The gland cells are seen to be excessively
active, but, as yet, do not present any marked abnormal
changes. Hitherto, let it be noted, that no proliferation or
desquamation of any of the epithelial cells has taken place,
and, should the inflammation proceed no further, should
restitutio ad integrum be now brought about, the pathological
phenomena enunciated sufficiently well represent what might
be termed a slight " congestion" or " catarrh " of the bronchi.
On the other hand, it must be remembered that in severe
inflammations the above changes take place rapidly—probably
within two hours. What constitutes a catarrh slight is
essentially the slowly progressive course of the limited
pathological events.

As the inflammation proceeds (and in ordinary cases after
about twenty-four hours) the *proliferation* and *desquamation*
of the epithelium commences. First of all, *many of the
columnar ciliated cells exhibit two or more nuclei, and they
divide into as many separate cells*, the outermost of which
occasionally still preserve their cilia. Perhaps this statement
may occasion some surprise. So far as I am aware, such a
transformation of the columnar cells has either been ignored
or denied hitherto. Hamilton,† for instance, who speaks with
most authority on this subject, states that " the columnar
epithelium is shed at a very early stage in the attack, and takes
no part whatever in the afterchanges which ensue. It does
not proliferate, there is no endogenous division of its nuclei,
and it seems to behave very much in the same way as the
formed layer of epidermis does in inflammatory affections of
the skin." Quite so. The columnar ciliated cells are the
fully and finally developed forms, and naturally proliferative

* It is stated by Klein that the first thing in the process of trans-
formation into the goblet cell is loss of the cilia. This may no doubt
be true normally, but owing to the rapidity of the process in inflammation,
it is quite usual to find a few cilia towards the edges of the cell. See
2 in Fig. I.

† *Pathology of Bronchitis*, pp. 28, 29.

changes are not to be expected in them! Flemming* also
states that he has never observed karyomitosis in a fully
formed ciliated columnar cell. I repeat, however, that there
can be no doubt whatever as to the division of these
cells, some of which are represented in Fig. I, 3. They must
be diligently searched for in cases dying early, and they
are not to be found in cases of mere mechanical hyperæmia.
Another phenomenon in connection with some of these dividing
cells is the presence within them of vacuoles. The appearance is
highly suggestive of one of the nuclei having escaped, forming
what is termed a free nucleus. Virchow was the first to
observe these vacuoles in cells which he termed brood-capsules,
and he further imagined that the vacuoles were first developed,
and in them daughter cells originated by a *generatio æquivoca*
of the nucleus. I need hardly say that this view is long since
given up. In many of the lower vertebrates—*e. g.*, frog,
evidence of the division of ciliated epithelial cells in certain
parts has been obtained by several, and Cornil and Ranvier,†
have described such in the artificially inflamed trachea of the
rabbit, the karyokinetic figures of which have been recently
demonstrated by Cox.‡ I have produced an inflammation in
the bronchi of the rabbit by the method they recommend—viz.,
the hypodermic injection of an etherial solution of cantharidin,
and I find that the *entire* cylindrical epithelium breaks up into
round cells at a very early stage. In treating of the normal
histology of the epithelia, I pointed out how frequently in
this mammal bi- and tri-nucleated ciliated cylinders were to
be seen, and hence these results are precisely what one would
expect. In the human subject, however, bi-nucleated columnar
cells are rarely if ever seen normally, never, according
to Baumgarten, and this, together with their comparative
infrequency in most cases of bronchitis at all advanced,
no doubt accounts for the supposition that they cannot
exist. The only objection which could be urged against
them is, that the supposed nuclei were simply pus corpuscles
coming from the mucosa which had penetrated into the
cell. That there is such a possibility in the general sense
can hardly be doubted, after the investigations of Volkmann
and Steudener § on this subject. In this particular case,
however, the contention is useless, for the fission of the cell-
protoplasm is apparently taking place, and more than this, as

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* *Studien über Regeneration der Gewebe*, p. 96.
† *Path. Anat.*, vol. ii, p. 10.
‡ *Zeigler's zur Path. Anat.*, &c.
§ *Centralblatt. f. Med. Wiss.*, 1868, p. 267.

yet no lymph-corpuscles have passed through the basement
membrane. As these changes proceed in the columnar cells
they soon begin to be loosened from each other and to be
desquamated. Their desquamation is effected by two distinct
agencies. First of all the epithelial cement substance gets
dissolved by the serous exudation from beneath; and secondly,
the rounded cells of Debove's layer proliferate and give rise
to round cells resembling pus cells, which push out the super-
imposed cylinders by their mere accumulation (No. 9, Fig. I).
Vast numbers of these round cells are rapidly produced,
carrying outwards the columnar cells in some places in the
smaller bronchi to nearly the centre of the lumen of the
tube. Socoloff* has well depicted this appearance in his
experiment, and not inaptly likens these cellular accumula-
tions to hills, on the tops of which the cylindrical cells lie.
Not a few of the latter cells, however, lie scattered here
and there in the exudation No. 1, Fig. I, and a few spindle-
shaped or transitional cells are likewise to be detected
(No. 4, Fig. I). Another occasional factor in the raising and
pushing outwards of the cells is the mucus derived from
the glands, which as it issues from the duct may sometimes
be observed to have insinuated itself under the epithelial
layer in the immediate vicinity, dissecting out the cells.

Now, it may indeed be asked whether the catarrhal pro-
ducts just described—the various epithelial cells namely, all
embedded in a tough mucus—are not associated with others
derived from the mucosa, whether, in fact, many of the cells
of the catarrhal secretion are not lymph corpuscles which have
passed out through the basement membrane. Let us see,
therefore, what at this period is taking place in the deeper
structures. It will be seen that the loose tissue of the mucosa
has become raised at intervals, chiefly opposite the interspaces
of the cartilages, and hence the mucous membrane is irregu-
larly thrown into folds. Both here and in the submucosa the
cellular infiltration and distension of the blood-vessels is con-
siderable, and rows of lymph corpuscles or leucocytes may
sometimes be observed between the muscular fasciculi. The
adventitia, however, shows no change further than that of
œdema. A good deal of inflammatory action is, however,
noticeable in and around the nerve ganglia. The numerous
capillaries which ramify in the connective tissue framework
of the ganglion are engorged, and this, no doubt, causes irrita-
tion of the ganglion cells by pressure, and likewise leads to
nutritive disturbances. Hence, it may be conjectured that this

* *Virchow Archiv*, vol. 68.

condition of the ganglia stands in a causal relationship to the spasmodic attacks which so frequently supervene in this disease. This supposition has been denied by some—*e. g.,* Wintrich, Traube, Weber—who have propounded theories of their own, while others, again, have connected this spasm element with the presence in the inflammatory secretion of Leyden's or Charcot's crystals. On the other hand, there are those who regard the ganglia as chiefly concerned with the regulation of the mucous discharge, and thus look upon the excessive secretion of that element as the reflex expression of their irritation. The congestion and pressure exerted on the different fibres of the vagus give rise to the cough, and Kohts,[*] of Strassburg, states that there is a particularly sensitive area of the mucous membrane just at the bifurcation of the trachea, and this, no doubt, serves to explain in many instances the aggravation of the cough in the recumbent posture, by the gravitation to this area of irritating products. Now, with these features in the wall of the bronchus, at this particular stage of the affection, do we find cellular elements (which, without reference to their origin, I may term lymph corpuscles), escaping from the tissue underneath the basement membrane, on to the free surface ? Again, referring to Hamilton, I must quote his strongly worded and reiterated negation of such a process. " I have never," he remarks, " seen any evidence, in acute bronchitis, that the catarrhal cells are lymph corpuscles, which have escaped on the surface, the basement membrane seeming to form an impenetrable barrier to their exit. I do not believe that such diapedesis takes place, and even in chronic bronchitis, where this structure becomes much attenuated, I have never seen any direct and clear evidence that they pass through it." He further seems to regard the inability he attributes to the lymph corpuscles as matter for regret, because owing to the block which ensues later on, the corpuscles become forced back and ultimately wander into the adventitious tissues, and excite serious and often irrecoverable damage therein.

Now, in a cursorily conducted examination, this statement of Hamilton appears easy of refutation. It looks as though breaches of the basement membrane were frequent, and the evidence of corpuscles escaping through it, clear. Careful examination has convinced me that these appearances are mainly deceptive. Again and again have I thought the cells to be escaping, only to find that the phenomena were illusory. For the mere fact of cells lying above

[*] *Virchow's Archiv*, vol. 66.

or beneath the membrane, or of a hæmorrhage into it, proves nothing; and in like manner, the existence of cells in the lumen resembling pus corpuscles, proves nothing, for these cells might have come from the mucous glands; and, moreover, the proliferated epithelial cells are hardly, if at all, distinguishable as to their nuclei from those of pus corpuscles. Nevertheless, I have frequently been enabled to demonstrate the various stages in the actual translation of the lymph corpuscle through the membrane. The appearance is quite characteristic, and once seen leaves no doubt whatsoever. The following, then, is the *mode in which the lymph corpuscle passes through the basement membrane :*—It first shoots out a process, easily seen, passing along one of the now distended canaliculi already referred to. Situated in this fashion, I cannot liken it better than to a *comma* with its body beneath and its tapering process curving upwards. It next follows up the process and gets moulded into an oval shape—its extreme length being now just the breadth of the membrane. A similar oval form of lymph-cells is seen in inflammation of the cornea, as they squeeze themselves through the lymph canaliculi of von Reck-linghausen, and Axel Key * has, I believe, described a similar appearance in the tubes of Bellini. The next step is that the corpuscle gathers itself together near the epithelial margin of the membrane, having now a process directed the opposite way, and very soon afterwards it emerges as a round cell on the free surface. In this way, by the third, or at most the fourth, day the catarrhal discharge contains a considerable number of cells derived from the mucosa; whilst the various forms of epithelial cells first discharged, now present further very curious and instructive changes.

Let us examine these cell forms. First, with regard to the columnar cells, it is apparent that they are undergoing a retrograde metamorphosis. Some are undergoing fatty, and others mucoid, degeneration. Hence it is that ciliated columnar cells are comparatively infrequent in the expectoration of bronchitis. They die and become dissolved early, before the expulsive efforts have been sufficient to dislodge the tough, stringy mass which clings to the surface of the tubes. The goblet cells are desquamated only to perish quickly. Various forms of these, after they are shed, are depicted in Fig. I, 2. The bi- and trinucleated columnar cells (3, Fig. I) have already been referred to. I have also depicted rounded and short oblong ciliated cells (7 in Fig.), and the

* *Hygeia*, vol. 30.

peculiar cell No. 6, having a round body and a long process, all which I have discovered, but very rarely. Similar forms have been noted in the artificial bronchitis of animals. Discussion has centred most round the spherical ciliated cell. I have only observed it in cases wherein the dividing columnar cells existed, and hence can have no dubiety whatever as to their origin by such division. My acquaintance with this cell dates a considerable time prior to my perusal of Socoloff's experimental researches, wherein an exactly similar body is described and depicted, as well as the cell No. 6. They have also been noticed by Rindfleisch,* by Ranvier,† by von Brücke, ‡ and by E. Neumann. § They exhibit
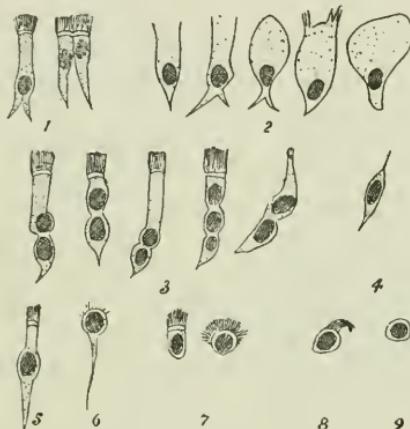
Fig. I.

amœboid movements when recent, and behave generally as white blood cells. It is noticeable, however, as Neumann points out, that the cilia are only complete round a portion of the periphery—so far as I have noticed, about three-quarters of its extent. Occasionally, also, the cilia converge to a point (as in No. 8), which Neumann describes as "resembling the point of a small paint brush." The production of these cells by endogenous division of the nuclei of the columnar cells I take as proved, and this is the view maintained by Rindfleisch, Ranvier, and Neumann. Socoloff, ‖ however, has advanced a new theory for their formation. He points out that in the catarrhal secretion of the artificially

* *Virchow Archiv*, vol. 21.
† *Traite Technique d'Histologie*, p. 243.
‡ *Vorlesung über Physiologie*, I, p. 445.
§ *Med. Centralblatt.*, 1876, p. 417.
‖ *Ibid.*

inflamed mucosa of the dog, ciliated cells may be seen having
a round body and a long pointed process, corresponding to
No. 6 in Fig. I, but with the addition of cilia. He regards
this cell to have assumed such a form in virtue of a certain
contractile peculiarity, by the further exercise of which the
process gets absorbed, and hence the round ciliated cell. In
this he is supported by von Brücke. Socoloff has also observed
multi-nucleated cylindrical cells in the exudation, but these
he regards as formed by the penetration into the epithelial
cells of pus corpuscles; and he further states that he has
observed *red* blood cells in the interior of these epithelial
cells—which is rather remarkable if correct. Anyhow, the
fatal objection to this theory is, that the cilia of the des-
quamated cells are the first to disappear, while the process
is last; and is it at all likely that the columnar cell can have
passed through all the stages referred to, and either absorb
or lose its process, and yet the cilia remain intact and
adherent? Then, it may be retorted, how is the round cell,
No. 6, with the tail or process to be explained? It is easily
done. I have obtained the most conclusive evidence that
this body is nothing other than *the nucleus and process of
a ciliated columnar cell* (No. 5 in Fig.), the former having
retained around it a small quantity of the cell protoplasm,
the jagged edge of which might give rise to the fancy that
degenerate remains of cilia were still adherent.

If the phenomena hitherto described in the mucosa and
epithelial layers are striking and significant, it will be found
that the ducts and acini of the mucous glands have become
the theatres of active changes not a whit less remarkable. On
examining the duct, it will be found that its lining epithelium
is proliferating in a luxuriant fashion, and not infrequently, as
a result of this, a complete block takes place. To such a degree
may the pressure thus occasioned on its walls attain, that
occasionally a saccular dilatation ensues, leading in severe
cases to solution of continuity of the membrana propria, and
giving rise to the appearance of a diffuse abscess. The
appearances in the alveoli are generally very diverse in the
same gland, and at first are very perplexing. Finding the
descriptions of the gland changes conflicting and quite
unsatisfactory, I endeavoured as carefully as possible to trace
the course of events *seriatim*. The first and earliest inflam-
matory change in the secreting cells is, that they become more
cloudy, and *enlarge* until the lumen is almost entirely occupied
by them, when they are of a more or less *conical* shape. The
nucleus also *doubles in size*, and *moves forward* to near the

centre of the cell protoplasm. The acinus at this stage is represented in Fig. II, No. 1. It will be noticed that some of the cells are bi-nucleated, and an endothelial-like layer rests above the membrana propria. A new phase is then entered on. Many of the cells divide and give rise to catarrhal cells, some of which are seen lying free in the centre of the acinus, and all of them, whether dividing or not, become distended with mucus. They then present the appearance of 2, Fig. II. No nuclei are visible, and only the outlines of the cell are to be seen. Owing to their mutual distension, they seem to have assumed diverse shapes, while the acinus becomes greatly enlarged from the pressure thus exerted. Very soon all the
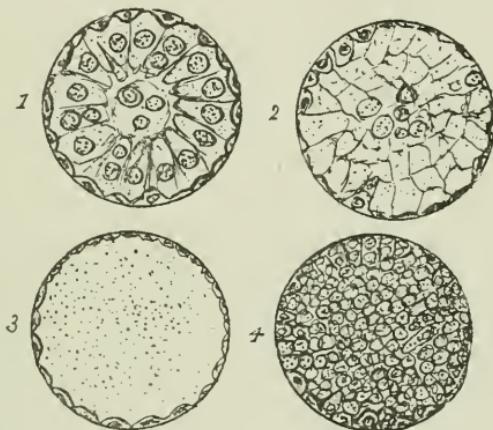
Fig. II.

cells burst, they become confluent, and a transparent or hyaline-looking though somewhat finely granular mass is all that can be made out in the acinus—represented in 3, Fig. II. That this is mucus is easily proved by the addition of acetic acid, when a dense precipitation of mucin is produced. Now, is this swelling of the glands and tension of mucus to be solely regarded as due to the inflammatory process, as most authors assert? Partly, no doubt, but it seems to me highly probable that it is due to mechanical causes as well, by which I mean the stoppage in the duct already referred to. The mucus is unable to escape, and hence, possibly enough, the bursting of the cells, hyaline appearance, and distension of the acini. That such is the case receives support from what occurs next. As the mucous plug in the duct dissolves, the acini assume quite a different appearance. The pent up mucus escapes, and

round or oval granular catarrhal cells take its place. They
are evidently derived by germination of the lining endo-
thelium-like cells mentioned, for these latter can now be seen
to enlarge and exhibit nuclear fission.   The inflammatory
stimulus seems too great to allow of these cells developing into
fully formed secreting cells, they are kept proliferating, and
thus it will be seen that in this respect they exhibit the exact
counterpart of what takes place in Debove's layer of the
surface epithelial cells.   Hence, also, we find in this process
strong support to the Heidenhain-Pflüger theory, that these
proliferating cells and crescents of Gianuzzi are not merely
shrunken, exhausted secreting cells.   Again, in some cases of
severe bronchitis the fully formed secreting cells seem to be
desquamated at an early period, when young darkly granular
nucleated bodies may be seen partly or entirely lining the
membrana propria.   Up till the time of this catarrhal pro-
liferation, it is quite certain that no leucocytes have penetrated
into the alveoli from the stroma, as they have been seen to
penetrate the basement membrane to reach the surface.   This
is owing to the opposing pressure exerted by the distended
vesicles.   Now, however, it is evident that with the increasing
accumulation of cellular bodies in the stroma, and with no
such barrier to oppose them, they effect a passage through the
membrana propria, and become mixed up with the proliferated
epithelial elements, until ultimately the acinus has the appear-
ance represented at 4, Fig. II.   It may be described as nothing
else than a small abscess, and should the inflammation be very
prolonged or become chronic, several acini may unite to form
a purulent mass.

About the fourth day in the course of the bronchitis, a
new and highly interesting phenomenon develops in the con-
nective tissue of the mucosa and submucosa.   Hitherto, as we
have seen, the infiltration of leucocytes and the serous exuda-
tion have been the only marked features in this structure.
But now the fixed tissue-cells begin to show signs of activity.
They undergo a remarkable metamorphosis.   The stellate
corpuscles in the lymph spaces *swell*, becoming *unduly
prominent* and *granular* and get *desquamated from their
bundles*.   They then *lose their processes*, probably by their
being retracted into the body of the cell.   The cell greatly
increases in size, its oval nucleus *enlarges* and becomes *darkly
granular* from chromatic change.   The nucleus now divides,
and the cells containing such divided nuclei assume various
shapes, that most general being of a more or less irregularly
oblong type.   The cell may now divide, or it may present a

still further endogenous increase of its nuclei, which may be seen to be of various sizes. One of two things may then occur. The protoplasm may break up into as many separate cells as its contained nuclei, or, it may dissolve, and the nuclei be set free. The appearance of these cells does not favour the supposition that leucocytes have penetrated into them, indeed, the very fact of their attaining such large dimensions is of itself a proof to the contrary. Nor is this process confined to the connective tissue corpuscles proper. If one of the lymphatic vessels in the vicinity be picked out, and this is generally easy in the adventitia of bronchi containing some pigment, and by the further presence of the lymphoid bodies—which form diverticula of their walls, and will also contain a certain amount of pigment granules—if the lymphatic vessel be examined, it will be found that the endothelial cells lining it present pretty much the same characters as those of the corpuscles lying in the spaces. That is to say, they have become prominent, bulging from the vessel wall, and some of them containing two nuclei. In fact, the accumulation within the lymphatic vessels of the morbid cells has set up inflammatory changes in their walls, extending along the same until their termination in the lymphatic glands at the root of the lung, which in turn are markedly enlarged, contain an excessive quantity of lymph corpuscles, and exhibit cells in their connective tissue trabeculæ undergoing nuclear division.

The outcome of this cellular multiplication in the mucosa and submucosa is, that long rows of cells are disposed between the fibrous tissue bundles. The lymph spaces between the bundles become confluent, and hence the tissue become dissected out by these purulent infiltrations. Similar appearances, though to a less extent, are to be found in the muscular layer. The cells are also to be seen passing in transverse rows between the cartilages (which in turn show, however, no marked changes), and if the inflammation continues, it is not very long until the connective tissue cells in the adventitia also divide and multiply. These, together with the leucocytes, likewise form rows, dissecting out the wavy bundles of the tissue, which, in their turn, are laden with round and fissiparous cells. It would seem as though this process, when once begun in the adventitia, proceeded in a very active fashion, and the adventitia soon comes to have the appearance of a broad peribronchial cellular zone, which contrasts strongly with the contiguous unchanged adventitia of the vessels. There could, in fact, be no more striking example of the production of a vast array of pus cells in inflammation, from

the fixed tissue cells, than that here afforded, in this sparsely vascular peribronchial adventitia. How Cohnheim can assume such an attitude of opposition to this, is inexplicable. He appears to have been rendered blindly enthusiastic by the results of his discoveries connected with the blood-vessels in the inflammatory process. In his *Lectures on Pathology*,* he states that " a new production of pus corpuscles from fixed tissue cells has not so far been demonstrated. . . . If we disregard such (regenerative) processes, which, after all, are to a certain extent accidental concomitants of inflammation, the prospect of proving the occurrence of progressive cellular changes, directly induced by the inflammatory irritant, appears doubtful enough." In my humble opinion, it requires neither a Virchow nor a Stricker to demonstrate the contrary proposition. It can be plainly enough seen by any one caring to do so. We may, therefore, regard the entire bronchial wall at the height of an acute inflammation, as more or less infiltrated with cells derived in the various modes stated. In the smaller sized bronchi, containing cartilages (for the finest bronchi are not alluded to in this paper), it becomes evident that pus cells are now traversing the basement membrane in an oblique direction to reach the free surface, in addition to their passing through its canaliculi. In the article on Normal Histology, it was stated that fusiform nuclei were sometimes rendered visible in the substance of the membrane. There is strong evidence that, if the inflammation continues severe, these nuclei germinate, and in this way contribute to the gradual disintegration of the membrane, more especially in the smaller sized tubes. Socoloff, in his experimental investigations, describes a layer of proliferating spindle-shaped cells existing immediately underneath the epithelial layers; and I have seen a less marked layer of spindle cells in this situation in the artificially inflamed bronchus of the rabbit. That the nuclei of the basement membrane in man undergo fission, is thus borne out by analogy. However, it requires a very severe inflammation to effect such a change, even in the smaller sized bronchial tubes. By the continual discharge of these pus cells the catarrhal mass in the lumen undergoes changes. Schottelius † has obtained most conclusive evidence of the degree of emigration of the pus cells by the blowing in of vermillion dust into the trachea of dogs. The coloured particles were only absorbed by the protoplasm of the lymph cells, the epithelial cells remaining passive, and hence their

* Vol. i, pp. 290, 291.
† *Virchow's Archiv*, vol. 73.

relative proportions in the exudation could easily be dis-
tinguished. The discharge of mucus now abates, and the
expectorated matter is highly purulent, and often tends to
agglomerate into masses—*sputa cocta* of authors. The disease
having now attained its height in favourable cases, begins
to recede. The inflammatory cells partly undergo fatty
degeneration, and are partly—and no doubt chiefly—carried
off by the lymphatics. In the experiment referred to, the
lymphatics, and likewise the bronchial glands, were choked
ultimately with vermillion-laden cells. The epithelial activity
ceases, and new cells are formed in the manner I formerly
described, any gaps being filled up by the peripheral extension
of the existing cells, just as is seen taking place in healing
wounds of the surface of the body.

(*To be continued*).

SOME REMARKS UPON STRICTURE OF THE URETHRA.*

By WILLIAM JAMES FLEMING, M.D.,
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BEFORE dealing with stricture there are some points in the
physiology of the urethra which are not impressed upon us
either in the surgical or physiological text-books.

The first of these is that, when at rest, the urethra is not
a tube, or at least an open one. Its surfaces are everywhere
in contact with each other. As a consequence it is a most
efficient valve. No amount of external pressure could drive
gas or fluid towards the bladder so long as unaccompanied by
mechanical separation of its walls from their close contact
with each other. You are all familiar with the similar valve
used in many surgical appliances—a very flaccid rubber tube
disposed so that fluid can pass into it, but whenever the
direction of pressure is reversed the walls collapse and effectu-
ally bar its return. Another important point to consider is
the direction of what I may be permitted to call the peristaltic
action of the urethra. The urethra rapidly extrudes an instru-
ment not securely fixed in it, and this extrusion, although it
may sometimes be begun by contraction of the bladder, is not
wholly due to it. The instrument does not lie in the urethra
after passing beyond the bladder influence, but is entirely

* Read before the Southern Medical Society, 16th January, 1890.

expelled, as are the contents of the urethra itself, whether the urine it contains after the bladder is empty, or the semen or fluid introduced from without. In addition, and partly in consequence of the foregoing conditions, the urethra, by its syphon action, materially assists in completing the evacuation of the bladder. The contraction of that viscus, when acting upon a considerable quantity of urine, overcomes the sphincter and separates the walls of the urethra. The meatus is lower than the base of the bladder, and as soon as it is filled with fluid the urethra must act as a syphon, draining the bladder to the last drop, almost if not altogether, without more than passive contraction of that organ. All these conditions absolutely prevent air passing back into the bladder, an accident of which I will have more to say. Next we have to remember that the calibre of the urethra varies very much at different parts of its length and in different individuals. Otis, the well known American surgeon, was the first to point out the importance of this, and to claim the existence of a relation between the external circumference of the flaccid penis and the calibre of the urethra. His figures are as follows (*Stricture of the Male Urethra*, 1878, p. 138):—

External circumference 3 inches, urethra 30 m.m.
" $3\frac{1}{4}$ "   "   32 "
" $3\frac{1}{2}$ "   .,   34 "

And so on, each external quarter inch giving a rise of 2 m.m. These relations have been questioned, but are probably approximately correct. At the same time, I believe with him, that almost invariably the meatus is the narrowest, and the bulbous portion the widest part of the canal.

At any rate, even if Otis is inclined to exaggerate the normal size of the deep urethra, all surgeons who have tried large instruments must admit that it is greater than until recently has been taught.

Having thus cleared the ground by insisting that the urethra at rest is a closed tube—that is, with the sides in apposition throughout its whole length : that it possesses what is at least analogous to a peristaltic action : that it behaves in urination as a syphon : and that it differs in calibre in different individuals, and what is more important, in the different parts of the tube in each individual, the meatus being the narrowest, we must now consider that diseased condition, due to diminution of its internal diameter in one or more places, which we call stricture. Without going into minute pathological questions, and at once assuming as we, I think, fairly may, that

some irritation of the mucous membrane is the original cause, I have for some time found it convenient to class all strictures as arising either from a thickening of the mucous membrane itself, or by pressure upon it by new deposit effused below. Of course we may, and perhaps generally have both, but one or other predominates. These conditions can generally be separated. If on the passage of an instrument, however gently, a drop or more of blood follows its withdrawal, you have indicated a congested and probably swollen state of the mucous membrane ; if, on feeling externally along the urethra, a thickening and hardening can be detected in one or more places, then you have to deal with a stricture from external pressure. Without claiming for this division of strictures any hard and fast classification, it certainly is useful clinically. It does not include what are called spasmodic strictures. About them I may say at once that I believe they are simply reflex contractions of the muscles surrounding the urethra, and are always due to some irritation generally at *some other part* of the canal. Having then a stricture to deal with—I waste no time on the well known symptoms or diagnosis—its treatment must be undertaken with no light heart. The more experience one has in urethral work, as in most other departments of surgery, the more cautious one becomes. Certain precautions have to be taken, and as the two cases of relief of retention and permanent cure or alleviation entail very different procedures, I will consider them apart. There are, however, a few general rules which I may first state. My practice is never to use a catheter until I have passed a bougie, and never to use a metal instrument if a soft one will pass. My reasons are these—First, we have seen the arrangements by which the entrance of anything per urethram into the bladder, especially air, are provided against in the normal passage. I need not dilate on the danger of septic contamination from such a source. If, then, a hollow instrument is passed into the bladder all the beautiful provisions for keeping air out are at once rendered useless, and there only remains the pressure under which the urine exists to prevent regurgitation. When this pressure is relieved, and especially when by long distention the contractile power of the bladder is temporarily paralysed, even the respiratory action may cause regurgitation. If a hollow instrument is passed, the bladder should be followed down, as it empties by the hand above the pubes, just as the contracting uterus is, and the instrument withdrawn before the pressure is relaxed. But, besides the chance of regurgitation, a hollow instrument is far more

difficult to keep or make antiseptic, although much may be done by always boiling silver catheters after use. It is not only the fear of contaminating the putrescible contents of the bladder, but of setting up mischief in the urethral abrasions, which even in the most careful hands must occur. You ask me, naturally, how the passage of a solid instrument is to relieve the retention. I answer that in nine cases out of ten the patient can at once, after you have passed a solid instrument, empty his own bladder; or, if he fails, you will now have no difficulty in passing a catheter slightly smaller than the bougie you have just had in; or, if this has been a very small one, my practice is to follow it as I will describe in speaking of gradual dilatation with the successive numbers until a moderate size has been reached, when, if the patient cannot micturate freely, as he usually can, a hollow instrument may, with facility, be passed.

The next routine practice I adopt is always, before passing an instrument, for any reason whatever, to inject cocaine, 20 minims of a five per cent solution, just as if you were injecting for gonorrhœa. This will often, by relieving spasm, prevent the necessity for instrumentation, by enabling the patient to empty his bladder. At any rate, I cannot give it higher praise than by asserting that, as far as the urethra goes, it is as good as chloroform, and in my hands has never had the smallest injurious effect.

These are general rules. Given a case of retention, you, of course, try first a large soft instrument, preferably an olivaire. Even if it does not pass, it tells you much—where the first stricture is; whether it is of the spongy or hard variety, &c. Now take the finest soft bougie. If, using it properly, you fail, the probabilities are that either you have to do with a very tight stricture, or that the entrance to the contraction is out of the centre, or at any rate not straight. If, however, you get it through, take another like it and try to pass it alongside. If you can manage this, the greater part of the difficulty is over; you will have no difficulty in passing 1-3 conical if—and this is a most important point—you do it so rapidly that the stricture has not time to contract. It is best to hold the penis steady and slightly on the stretch with the left hand, have the instrument rapidly and steadily withdrawn by an assistant, and the moment it is out swiftly pass the conical bougie. This rapid replacement is a manœuvre of the greatest use in all difficult cases. Those of you who have not tried it will be astonished at the facility with which the instrument goes in, if no time is given for contraction, and the

urethra is kept steady and slightly on the stretch. By a repetition of this plan, with very gradually increasing sizes, there is never any difficulty in running up the stricture as far as you like. Of the expediency of this I will speak hereafter. If, however, you do not succeed in getting any instrument through, do not persevere too long—aspirate above the pubes. This is easy and safe—much easier and better for the patient than prolonged efforts with bougies.

In the more deliberate procedures required for treatment of a stricture not causing complete retention, the above rules and considerations hold equally good, but some must be superadded. Do not be disappointed if you do not at the first sitting, or even for many sittings, succeed. Half an hour of well directed effort is enough both for the patient's urethra and the surgeon's temper. Look on the stricture as a lock you have to pick. Try all sorts of keys. Small instruments and large, but always probe-pointed. You will be surprised sometimes by getting a large instrument with a small short probe-point through when your fine bougies have failed. I believe it stretches the urethra in front of the stricture, and, as it were, opens its mouth and takes out creases and twists. One of the most useful instruments in our armamentarium is the bougie conductrice. But be sure you get the genuine French instrument, and that the joint is strong. I once trusted to a local maker and regretted it. It is used by first passing the fine soft bougie, and then screwing on the steel sound and forcing the whole in. The soft part curls up in the bladder, and guided by it you cannot get out of the urethra even if you use force with the follower. This is especially useful in connection with internal urethrotomy. Another instrument which has often helped me is the tunnelled catheter and guide. You first pass the guide and then slip over it the catheter.

Another useful dodge is to inject the urethra with some force with sweet oil. I have known this in itself enable a patient with retention to micturate. Having then dilated the stricture to some extent, you have to consider the further treatment of the case, and this, fortunately, you have time to do, as there should be no further interference for at least three days. In the meantime the question of rigor arises. About half your cases will have a rigor. If slight I pay little attention to it at the time, but it is a valuable guide as to the subsequent treatment. It seems to me simply to be a nervous protest by the urethra against anything being passed along it the wrong way. 10 grs. of quinine and a morphia suppository

before instrumentation *sometimes* prevent it. You have now
two courses open to you—Dilatation and Urethrotomy. The
dilatation may be sudden, rapid, gradual, or slow ; the
urethrotomy, external or internal. I will not enlarge either
upon slow gradual dilatation or external urethrotomy—are
they not in all the text-books ?—but this I venture to advise
in gradual slow dilatation : do not hurry ; never more than
three or four sizes English at a sitting, nor more than two
sittings a week ; but don't stop under fifteen English. As to
rapid gradual dilatation, so much recommended lately, by this
is meant running up a stricture with conical bougies, to say,
fifteen at one sitting. Its very ease is, I fear, its danger. I
did two cases one day lately. The result of one was admir-
able. I had difficulty in getting in the finest soft instrument
to begin with, and in five minutes had passed fifteen English.
There was no bad effect, and the patient was dismissed, to
return for occasional passage of an instrument. The other
case has had many rigors, and must, therefore, have internal
urethrotomy. He bled, not when dilated, but the first time I
passed instruments upon him, and was, therefore, probably
one of the cases in which swelling of the mucous membrane
predominates. At one time all strictures were burst or
" Holted." Now this is rarely done, and I consider never
should be done. The cicatricial material which constitutes
my second class of strictures acts as a splint or support to
that part of the urethra, making it the strongest piece of
the circumference. Forcible bursting, therefore, tears the
healthiest part, and leaves the disease untouched. It gives
immediate relief, but the last state of the stricture is, in my
experience, always worse than the first. Berkely Hill
recently has asserted that all dilatation is really tearing (see
Illustrated Medical Journal), and I fear that the rapid
gradual I have described, advocated by Mr. Teale, is so. I
cannot but feel convinced, however, that very gradual dilata-
tion is efficacious by producing absorption rather than rupture.
If we wish to divide a stricture, is it not better to do it where
you wish, and to the extent and depth you wish with a knife ;
or, in other words, to do internal urethrotomy. I am coming
to regard internal uretrotomy as a plain duty in many, but
not all, cases of stricture. For a time I cut nearly every
stricture I met with, and never had to regret it, but since, for
the sake of comparison, and to make sure that I was not
carried away by zeal in a comparatively unusual line of treat-
ment, I have held my hand. On comparing the results of the
two methods, I have determined to return to urethrotomy in

the majority of cases. I, on a former occasion, had the honour to submit to this Society a form of uretrotome I devised some years ago, and with which I have since very frequently operated. Some improvements in detail have been introduced, and with increased experience in its use I am still satisfied with it. In performing the operation I generally use the conductor. Pass the knife closed through the stricture, bring it forward until the sheath of the blades, acting like a bougie *a boule* is arrested, then project the knife to the previously determined distance, and drag it through the constriction until the resistance ceases, steadying the urethra with the left finger and thumb. In first performing this operation, if you have at all a gristly stricture to deal with, you will be astonished at the force required to divide it. This need only be restricted by the strength of the instrument, which, of course, must be kept very sharp. That absolute cure of stricture can be obtained I doubt any more than absolute cure of a cicatrix, but by free division and subsequent stretching during healing, wonderfully lasting cures are effected. This stretching is to be begun about four days after the incision. I do not pass any instrument immediately, nor tie in a catheter. It is much better not, but when I stretch I do so thoroughly, up to fifteen or seventeen English. Keeping this up twice a week for a fortnight, and for another week or two less frequently. Then, if possible, teaching the patient to pass a 9-12 steel conical for himself, and directing him to do so at least once a month.

THE EXAMINATION OF THE EYE.

By FREELAND FERGUS, M.B.,

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Before discussing further the various forms of ametropia, we should perhaps say something as to the tests of visual acuteness. For example, to-day we have given a hypermetropic patient a pair of glasses, and we feel justified in doing so because these glasses materially improve the person's vision for distance. Therefore at this point it may be well to say something as to the tests for vision.

The act of vision may be called a threefold act. It certainly

involves the perception of form and the perception of light; to most persons also it involves the sense of colour. Thus, within certain limits, the eye has the power of comparing the intensities of two or more lights, apart altogether from the form of the light. Thus, it is not difficult to say that an electric light is brighter than an ordinary gas or candle light. Be it remarked, however, that if the light sense is in abeyance, or markedly diminished, then the form sense will also suffer. That is to say, the power of distinguishing objects depends on the light sense and form sense; it does not, however, depend on the colour sense, for a man may be perfectly colour blind and yet have a very good power of distinguishing form.

On what, then, do the tests for vision depend, and what are the tests most commonly employed? When we look at two pictures on the wall, we may at once be able to say that one is larger than the other. We can make this comparison because
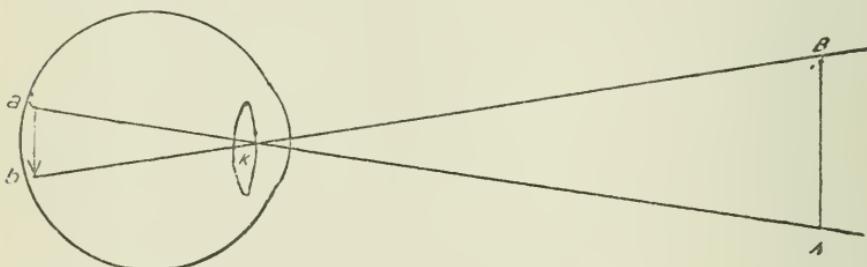
Fig. I.

the image of one covers a greater surface of the retina than the image of the other, and the objects are at the same distance from us. Therefore we rightly judge that any object in nature which gives a larger image than that of another is itself larger if both objects are at the same distance. Every object in nature which is clearly seen must subtend a certain angle. Thus, in Fig. I, the object *A B* subtends the angle *b k a*, the base of which is formed by the curved retinal surface *b a*. Just for a moment let us refer to the formation of the image *a b*. The point *A* reflects rays of light in all directions if not self-luminous, or emits rays of light in all directions if it is. Some of those rays enter the eye and are brought to a focus at *a*. Similarly the rays of light coming from *B* are brought to a focus at *b*, and all the points of the object lying between *A* and *B* are brought to a focus between the points *a* and *b*, and thus we have produced on the retina an inverted image of the object in nature. It will be observed that the nearer we

come to the eye, a smaller object will suffice to subtend an equally large retinal image as the larger object does at the greater distance. Indeed, from the properties of triangles we would have expected this, for a half of *A B*, divided by the distance between the eye and the object, is what is known as tangent $d\frac{1}{2} A k B$. Now, as one quantity diminishes so must the other if the relationship is to remain unchanged—*i. e.*, if the value of the tangent is to remain the same. When, therefore, at the same distance, two images cover a like extent of retinal surface, we judge them to be of the same size. Or rather, the fact that they do so makes us know involuntarily that they are of the same size. If, on the other hand, the images from two objects are of the same size on the retinal surface, but one object is at a greater distance than the other, then we know that the object farthest away from the eye is the larger. This judgment is formed from three sources of
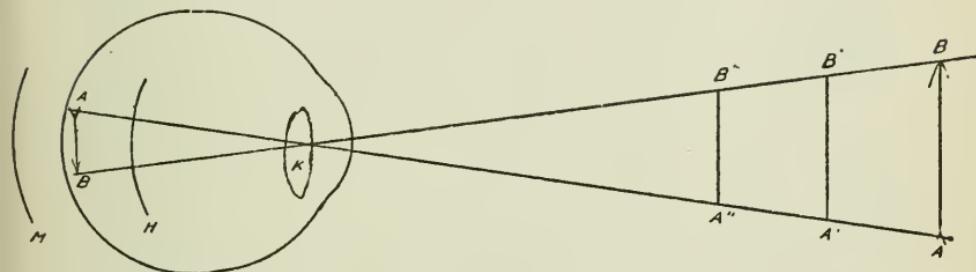
Fig. II.

information. First, the size of the images. They are both of the same size. One, however, is at a greater distance from the eye than the other. Were it not so, we would at once judge them to be of the same size. But not being at the same distance we have to increase both convergence and accommodation for the nearer. The nearer the object the greater the convergence and accommodation which are required for distinct binocular vision. Thus we have at least three factors to assist us in determining the size and distance of objects—viz., accommodation, convergence, and the size of the retinal image. These judgments are made without our being aware that we are making them, or of the factors which are involved. Some have, however, supposed that all have to learn to make such judgments as a matter of their own individual experience. Others, again, say that we inherit the power of estimating size and distance as the

result of a long line of ancestors who have like ourselves used these functions, and thus acquired from experience a knowledge of the interpretation of what they saw. This matter is of little practical importance to us; what concerns us more nearly is to fix physical standards for measuring the acuteness of vision.

If a physician percusses out the area of cardiac dulness, and notes down its breadth in inches or centimetres, he uses a physical standard, and can at subsequent examinations compare the state of the heart with what it formerly was. So we, as ophthalmologists, must carefully note and express in physical standards what a patient can see at the time of our first examination. Subsequent examinations expressed in the same physical standards will show whether our patient is improving or not. To make this investigation, test-types of a definite size and at a definite distance are used. The set of types which are most commonly seen in ophthalmic clinics are those of Prof. H. Snellen of Utrecht.* They may be said to consist of two sets—(1) those for near at hand; (2) those for a distance. Each set has its own proper use, and one set ought never to be used for the other. Fig. III represents a set of types for distance. In this plate the letters are reduced to about one-fifth of their real size. You will observe certain numbers above each line. Thus, above the largest you will observe M = 60; that means that the letter B ought to be read at 60 metres by an average healthy eye. What Snellen did was to find out the smallest letters that could be seen at a certain distance by the average healthy and emmetropic eye; and these test-types represent the average of the visual power

Fig. III.

* Such types may be had from Messrs. Curry and Paxton, London, Liverpool, and Bristol; and from Mr. George Prescott, Dublin, Edinburgh, Glasgow, and London.
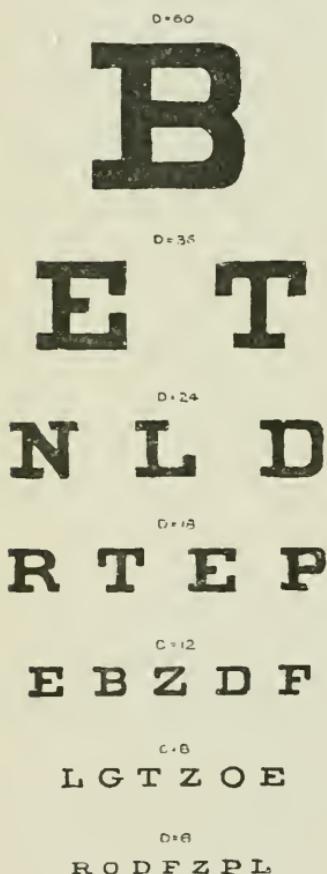
of many eyes examined.* Thus, an average emmetropic eye should see the largest letters at 60 metres, and the smallest at 6, and the others at intermediate distances.

The card on which the types are printed should be hung 6 metres from the patient. If his eye is average he should be able to see the lowest line at that distance. If he does, we say his visual acuteness is $=\frac{6}{6}=1$. His vision is therefore normal. Should he fail to see all the letters of the lowest row, but be able to read some of them, we say that his vision is $\frac{5}{6}$. Should he fail to see any of the letters of that line, but be able to read those of the line above, we say that his visual acuteness (hereafter written V.A.) is $\frac{6}{8}$. You will notice that the numerator of this fraction represents in metres the distance at which the patient is standing from the types, and the denominator the distance at which the lowest set of letters which he is able to read ought to be read. In this last example he can see at 6 metres those letters which should be seen at 8. Were we placing the card at 8 metres he would no longer be able to read this line, for if he could, his vision would then be expressed by the fraction $\frac{8}{8}=1$, which would mean that vision is normal. Snellen's formula is easily remembered and understood.

$$V = \frac{d}{D}.$$

Where $V = $ V A. $d\,d$, the distance of the patient from the letters and D, the distance at which the smallest letters which the patient can read at that distance ought to be read by the average eye.

Thus, suppose at 6 metres' distance a patient can read only the largest letter B, which ought to be at 60 metres, we say his $V. = \frac{6}{60} = \frac{1}{10}$. If his vision is less than this we may bring him nearer to the types till he just sees the top one and no more. Suppose we have to bring him to 3 metres from the card, then we say that his vision is equal to $\frac{3}{60} = \frac{1}{20}$, and so on. As it is sometimes inconvenient to bring the patient nearer to the types or the types nearer to him, it generally suffices in these low degrees of V. A. to observe the distance at which he can count fingers. Here is a patient who is quite unable to see even the B, we place him with his back to the window, and we try if he can count fingers at one metre from him. He does so readily, we hold up different numbers of fingers and he can tell the number held up at once. We next step

* This is not the place to enter into a full discussion of Snellen's calculations. Those who are interested in it will find it very satisfactorily dealt with in the first volume of Wecker and Landolt's *Traité Complet d'Ophthalmologie.*

back as nearly as we can judge about a metre. He still answers accurately, but if we step a little farther back, even 3 metres, he is not so correct. The greatest distance then at which he can count fingers is two metres. Now, as each stroke composing the B is in breadth equal to the breadth of a finger, and as the B can be read at 60 metres by the healthy eye, we may say that his vision is roughly $\frac{2}{60} = \frac{1}{30}$. By such means we can record with tolerable exactness a patient's vision. Cases frequently occur in which the patient is unable to count fingers at any distance. There remains then only one point to determine—viz., to test if he has any light sense. For all practical purposes this is best done by turning the patient's face towards either the window or a gas or lamp flame, and causing the hand to pass between the flame and the patient's eye, at right angles to a line drawn from the eye to the flame. If the patient can tell when the surgeon's hand is passed between his eye and the light, then he is said to have per- ception of light. Some idea of his power of quantitative perception of light may be obtained by ascertaining the greatest distance at which a light of known strength is seen by the patient, or by finding the weakest light which is seen. Any one possessed of a knowledge of photometry and the necessary apparatus, may construct a set of standard tests. Such tests, however interesting they may be from a purely scientific point of view, are of no practical importance in ophthalmology. The only point of importance is to know that the retina has a quantitative perception of light. We shall have to revert to this subject again when we come to discuss the examination of cataractous lenses.

The smaller hand types of Snellen are, in their proper place, very useful. They are, however, sometimes put to a use for which they are not adapted. For example, here is a student who, with his unaided vision, can see the smallest of the near at hand types. We find that he reads it perfectly well and fluently. On testing his distant vision we find, however, that he cannot read below the third lowest line of the distance letters when standing at six metres from them. His visual acuteness, then, is only $\frac{6}{12} = \frac{1}{2}$ of the normal. Had we trusted to the first test alone, we might have inferred that his visual acuteness is nearly normal. It would have been perfectly absurd then to have put down in our notes that he is able to see letters of No. 1·5, and to have rested content with that. These types are only useful as a test for near vision—*i. e.*, by them we can ascertain if the patient is comfortably suited for near at hand. The importance of

this investigation will become obvious when we have explained the function of accommodation. We are wholly averse, even with careful noting of the distance at which these types are seen, to their being used as tests for acuteness of vision. The types themselves consist in selections printed in different sized characters. Thus, we begin with words which ought to be read by a healthy eye at ·5 metre; the other sets ought to be read at ·6, ·8, 1, 1·25, 1·50, 1·75, and 2·25 metres respectively.*

Little more need be said on this subject. We hope enough has been said to prevent your making any grave error. Many patients, as we shall see, have not normal visual acuteness, because they are ametropic (myopic, hypermetropic, or astigmatic). It is therefore well, when we find such to be the case, to examine the refraction, and, if any error be found, to have it corrected before pronouncing as to there being a dimness of vision.

Before leaving this subject, a few points seem to us to call for passing notice. If you look at Fig. II you will observe that the length of the eyeball exerts a slight influence on the visual acuteness. Thus, if the eye is myopic (the antero-posterior axis being too long) the retina will occupy some such position as is indicated by the line *M*. In this case, as is apparent from an inspection of the diagram, a larger area of the retina will be stimulated, although the visual angle remains the same. Conversely, if the eye be hypermetropic, the retina must occupy some such position as is indicated by the line *H*. Consequently a smaller area will be stimulated.

In examining accurately the visual acuteness of patients it is well to have a uniform strength of light. This cannot always easily be accomplished in our public clinics, into which it is sometimes very difficult to introduce innovations, no matter how important they may be, but can always be done in a private consulting room. Thus, we are in the habit of examining patients by gas light, and we always illuminate the letters with the same number of gas jets. This suffices for ordinary practice. In making scientific investigations, however, one must first determine the strength of the light by using a photometer.

The conditions which cause dimness of vision are very numerous. Any opacity in those media which ought to be transparent may cause it. Thus, a want of transparency of

* Cards containing these near at hand types can be obtained at a small cost from Mr. Prescott. They are also to be found in most of the text-books on ophthalmology.

the cornea, of the lens, of the vitreous or of the aqueous, will give rise to a diminution of the acuteness of vision. When we discuss the examination of these various parts, we shall see what are the special diseased conditions which may give rise to this want of transparency.

Various affections of the other structures of the eye may also lead to dimness of vision. Thus, certain forms of conjunctival inflammation, more especially those known as phlyctenular, which are often accompanied with intense fear of light (*photophobia*), prevent the patient using his eye freely for reading. Iritis, acute or chronic, also, in the vast majority of cases, lessens very materially the power of vision. This may be brought about either by fibrin being deposited in the pupilary part of the lens capsule, or by fibrin being effused into the aqueous humour or else deposited on the posterior surface of the cornea (as in *Descemitis.*) Diseases of the choroid and ciliary body are also liable to produce dimness of vision. Cyclitis is specially apt to do it by the deposition of lymph in the vitreous humour, causing a loss of transparency in that humour. The same remark holds true of the various forms of choroiditis. Diseases of the choroid may, in addition, cause dimness of vision by lessening the nutrition of the eye and of the retina. Glaucoma is another source of loss of acuteness of vision, as are also affections of the optic nerves and retina. These conditions will be noticed more in detail in future lectures.

Certain diseases produce sudden and very great dimness, amounting in most cases almost to total blindness of the affected eye. These are separation of the retina, dislocation of the lens, embolism or thrombosis of the central artery of the retina, rupture of the choroid, hæmorrhage into the eyeball or behind the retina. Acute glaucoma is also a source of sudden great disturbance of vision. There are also certain cases not so well defined. Sudden blindness of one or both eyes, or sudden obscuration of a portion of the field of vision of one or both eyes, is often suggestive of epilepsy or of hysteria. Sometimes it seems to be caused by a weakened circulation in the choroid, and is not unfrequently associated with cardiac valvular disease.

As already pointed out, any of the various forms of ametropia may cause loss of acuteness of vision; and, therefore, before finally pronouncing as to its presence in doubtful cases, any error of refraction should be corrected and the vision then tested. Sometimes a patient complains of sudden loss of sight in an eye, which really is not sudden. A patient may have

much less sight in one eye than in the other for many years without being aware of it. Thus, few people who squint are aware of the fact that one eye sees much less keenly than does the other—a condition which is the rule in squint. We remember once being consulted by a lady who said that on the previous day her right eye had suddenly become affected with great dimness of vision. On examining, after correction of slight myopia, we found V.A. of right eye $= \frac{2}{60}$, and of left $= \frac{20}{30}$. We found that the nerve of the right eye was in a state of advanced atrophy, which we felt confident had existed for years. The dimness of this eye was therefore most probably of very long duration, although she had not been aware of it. She had on the previous day, for some reason or other, shut first the one eye and then the other, and had thus become aware of the defect.*

Two terms, *amaurosis* and *amblyopia,* are often used to express diminution of the visual acuteness. These words, though retained as a matter of habit in describing certain diseases, do not indicate the presence of any special disease any more than does the word jaundice in medicine. Thus, we still talk of tobacco amblyopia, meaning, thereby, a diminution in the acuteness of vision brought on by excessive smoking. The late Dr. Mackenzie, whose authority in such

* Certain authors describe a form of sudden dimness of vision under the name of *concussion of the retina.* This term includes cases of dimness of vision following a blow which has not been sufficient to cause any lesion discoverable to ophthalmoscopic examination. The following may be taken as a possible example :—

About a year and a half ago, a patient consulted us at Charlotte Street for blindness of one eye. This, he said, was brought on by a blow received from a horse's mouth. The animal had attempted to bite him, but had not succeeded in doing so ; it had only inflicted a blow. Externally, there was no abrasion of the skin, and we could feel no fracture. All we could see was a yellowishness of the skin where the blow was struck. So far as we could ascertain, the visual acuteness was reduced to the perception of light and shade ; and we felt pretty confident, before making our ophthalmoscopic examination, that we were dealing with a case of retinal separation, or of hæmorrhage into the vitreous. We found, however, that the fundus was perfectly healthy. We then tried the various tests for simulated blindness, but the case seemed genuine to them all. Moreover, the man did not seem at all likely to be the subject of hysteria. Under the circumstances, we thought it well to admit him to the wards at Berkeley Street. After he had been there but a few days under our care, vision returned and improved to $\frac{20}{30}$. We had him under observation for several months ; vision remained the same, and there was no subsequent atrophy of the optic nerve. We cannot altogether exclude the possibility of hæmorrhage affecting the nerve or centres of sight. Still, from the seat of injury, over the frontal bone, such an explanation is somewhat difficult to accept.

matters no one will deny, thus defines amaurosis :—" By amaurosis is meant *obscurity of vision,* depending on a morbid condition of one or several portions of the optic nerve—its root, its course, or its termination." He defines amblyopia as an incomplete amaurosis. Both terms ought now, we think, to be abandoned, since we are able to express the amount of dimness of vision in terms of the metre, and, generally speaking, to assign definitely its cause. For amaurosis we might well substitute complete loss of sight ; and for amblyopia, dimness of vision.

CURRENT TOPICS.

CLINICAL INSTRUCTION IN INFECTIOUS DISEASES IN GLASGOW. —This question, raised by the announcement made by Dr. Allan of Belvidere Fever Hospital, that he had decided to discontinue to give a course of instruction in infectious diseases, has been the subject of negotiation and discussion amongst the persons interested. A conference was held between a special Committee of the Corporation and the teachers of systematic and of clinical medicine in Glasgow, and the former drew up a report, which was submitted to the Town Council on 17th March.

The recommendations of the Committee, adopted as they have been by the Town Council, mark a substantial advance in the position of the matter. The Corporation has recognised that, as they have, in the fulfilment of their statutory duties, assumed all the hospital treatment of fevers in Glasgow, and have thus become the only body which can furnish material for the clinical teaching of this class of diseases, they have thereby incurred the responsibility of providing the necessary teaching. This is a broad and generous, no less than a common-sense view of the subject. As a result of this conclusion, they have made it part of the duties of the medical officers of the hospital to give instruction in fevers. Dr. Allan and the hospital medical staff are " required " to give such instruction; it is one of the duties accruing to their office.

The minute adopted by the Town Council on the 17th March reads as follows :—

" The Special Committee on this subject reported—

" '(1) That, as the hospital at Belvidere is now the only

place in Glasgow where clinical teaching in infectious diseases can be given, and as it is of great public importance that such teaching should be continued there, recommend that Dr. Allan, Physician-superintendent, should, with the assistance of the Hospital Medical Staff, be required to give such instruction ; Dr. Allan to report from time to time the number of students attending, and the progress made.

" '(2) That the teaching to be afforded by the Physician-superintendent and his assistants at the Hospital should be given free to all medical students, and that any additional medical assistance required at the Hospital should be provided by the Magistrates and Council.

" '(3) That without withdrawing the privilege granted by the Magistrates and Council to the professors of medicine at the various medical schools to take their students to Belvidere for the purpose of giving clinical teaching, such professors be earnestly requested to urge upon their students to take advantage of the instruction to be afforded by Dr. Allan and his assistants, and that if such professors wish at any time to demonstrate any infectious disease in the Hospital, permission to do so should be granted by the Physician-superintendent or the Hospitals Committee.'

" The Health Committee approved of the minute, and agreed to recommend that the clerk be directed to send an extract thereof to the General Medical Council of Great Britain and Ireland, with a representation that, in the opinion of the Local Authority, no qualification in medicine ought to be registered which is granted without evidence of clinical instruction in infectious diseases."

It will be noticed that the instruction is to be gratis, so that any medical student may attend the course of instruction at the Fever Hospital without fee.

The recommendation contained in the last paragraph of the minute is an important one. It will be agreed that all students who obtain a licence to practice should have received bedside instruction in this class of diseases, which will form a considerable proportion of their cases in practice. The question occurs as to how this is to be carried out. It is clear that what is wanted is a clinical course, the systematic instruction in fevers being left as at present to the professors of systematic medicine. It might be arranged that attendance at so many visits at a fever hospital, along with perhaps a short course of clinical lectures would be sufficient. Such an arrangement would be on a similar footing with the regulations as to attendance at midwifery cases. It might be

arranged, for instance, that Dr. Allan would arrange for a visit to the wards of the Hospital on every Saturday in the year. A student could at such time as he chose make out his (say) 10 visits, which would be duly certified. In addition, or perhaps more properly, as a preliminary to this, there might be a course of say three or four clinical lectures.

We think that the teachers of systematic medicine who have, at much personal inconvenience to themselves, hitherto induced their students to accompany them to Belvidere and, with no reward except the satisfaction of knowing that but for their efforts large numbers would have found their way into practice without having ever seen typical specimens of infectious diseases, deserve the thanks of the profession and of the public for their past services. It is not invidious to mention Dr. Gairdner as the pioneer in this disinterested work.

Now that the Corporation have at last so fully recognised their responsibilities, we trust that any feelings which have arisen will be forgotten by all parties in a hearty effort to turn to the best account the splendid field for the study of infectious diseases which is now thrown open to all students of the medical schools of Glasgow.

St. Mungo's College Medical Society.—The members of this Society held their annual concert on the 21st March last. The concerts have usually been given in the Dispensary Hall of the Royal Infirmary, but this year the students of the College were more ambitious, and invited their friends to meet them in the large Hall of the Christian Institute, which was filled in every part. The proceeds of the concert were to be devoted to the Student's Library, and the sum of £27, 10s. was raised.

Royal Hospital for Sick Children.—On Wednesday, the 19th March last, a sale of work was held in the Dispensary Buildings in order to defray expenses connected with the temporary Convalescent Home at Garelochhead. This Home has been of great service to the little patients both of the hospital and dispensary.

The John Reid Prize.—The trustees of this prize have awarded it for one year to Mr. L. R. Sutherland, Student of Medicine, University, for his essay on a case of " Biliary Abscess of the Liver."

THE DEE OIL COMPANY'S PETROLEUM PREPARATIONS.—We have received from this Company a number of samples of their vaseline preparations, and in particular we would bring under the notice of our readers the two preparations to which they have given the name of "Oleum Deelinæ" and "Salvo Petrolia." The specimens received are of great purity, and should be very useful in many of the more common irritable conditions of the skin as emollients. Our readers should give these preparations a trial, and compare them with the other preparations of petroleum already in the market.

REVIEWS.

A Text-Book of Physiology. By JOHN GRAY M'KENDRICK, M.D., LL.D., F.R.S., Professor of the Institutes of Medicine in the University of Glasgow; including *Histology*, by PHILIPP STÖHR, M.D., of the University of Würtzburg. Glasgow: James Maclehose & Sons. Vol. I, 1888; Vol. II, 1889.

THIS is a big book, but not a great work. It has many excellencies and many defects, at least from a student's point of view. Many of the faults are superficial certainly, but they will be apt to give a student a bad impression at his first introduction to the study of physiology, and it will take some time and tough reading to realize the good points sufficiently to overcome that impression. Possibly the medical student's point of view is not the one from which the most valuable estimate of the worth of a scientific work is to be expected; but we may be excused for criticising this book from that point of view, to some extent at least, from the fact that the author's main excuse for bringing out the book is, that he needed a text-book for his class.

The first charge in the student's indictment, then, would be that the book is too big. Medical works, especially those intended for text-books for students, have an unfortunate tendency to grow bigger and bigger in successive editions. This is unfair to the student, for it engenders a very bad habit of "skimming" as he reads, and often almost compels him to the use of synopses and "crams." It makes it almost necessary, in order to get any idea of the full outline of a subject, to get up some smaller book first, and if the smaller

book proves in any degree attractive the reading is apt to go no further. Besides, student life is too short for reading nearly all the big books recommended as text-books in the different classes, unless the student devotes to reading them, in a way which is apt to become very mechanical, time which would be much better spent in laboratories or hospital wards. Authors and editors might find much edification in tracing the histories of the various text-books, popular in successive generations of students, for this tendency to hypertrophy shown in successive editions is apt to be looked upon as congestive rather than as an evidence of increased vitality, and many a good book which has had a brilliant day as a one-volume "hand-book," has afterwards led a languid struggling life for a time as a two-volume "text-book," and finally sunk steadily and hope-lessly out of sight (of students of course), as a three-volume "system." There are other works, really of inferior merit, which have retained their popularity with many generations of students, very much, we believe, because they have not thus overgrown themselves.

Another complaint that the student would be apt to lodge would be that the bigness of the book was not unavoidable, because on going through it there may be found frequently a tendency to admit matter which cannot be regarded as anything else than padding, especially in the matter of illustrations, and there is much more repetition of description, especially histological, and of apparatus, than is really necessary. Much of the first volume might have been relegated to the appendix to the second, with advantage. For instance, all, or nearly all, of the chapter on the Microscope and methods of Microscopical Research, with its list of accessory appliances, in which towel, dusters, and slop-pail are not forgotten, and its list of reagents: and also the Appendix I, on special methods of making histological preparations, would have found a fitter place there, especially as we find there another chapter on special methods, &c. Then many of the illustrations are really not necessary, but seem to have been put in merely because the blocks happened to be at hand. A full page is given to the representation of a chemical balance, nearly another to pipettes, &c., three to microscopes, consider-able portions of six to microtomes, and so on. Contrast these with the diagram on page 415 of Vol. II, where 25 urinary deposits are crammed into about a third of a page. Then the 140 pages of Vol. I, taken up with organic chemistry, will be a great stumbling block to most students, and be apt to make the book compete with another well known text-book,

for the honour of the title of " The Student's First Glimpse of
Hades." Any one who has waded through its possibly
beautiful, but very complicated formulæ and figures, will have
richly earned the satisfaction with which he will read in the
preface that the chapter " will not be without its value   .   .   .
did it serve no other purpose than to show how little we
yet know of the molecular structure of organic chemical
substances." The really useful matter on this subject is
comprised in the five pages of chapter xii.

The last charge that we shall allow is, that in some places
the literary style is a little slipshod and careless enough to
make the meaning by no means clear to one who is quite new
to the subject. In no instance, probably, is the author's
meaning likely to be misunderstood by one who knows some-
thing of the subject beforehand, and who considers the
context ; but to a student, reading carefully sentence by
sentence and phrase by phrase, difficulties may occur, owing
to a want of the precision that is properly looked for in a
scientific work. We note the following instances. At p. 297,
vol. I, where the phenomena of secretion in cells are described,
it is stated that "as the process advances larger masses of
protoplasm are converted into secretion," which, being expelled,
" the protoplasm regenerates itself." Then at p. 347, the
following seems intended for a definition of filtration in
relation to tissues—" If we pour a fluid into a glass cylinder,
one end of which is covered by an organic membrane, and if the
membrane imbibes the fluid, or a portion of it, filtration
occurs." We note by the way that there is all through the
book a notable absence of any clear statement as to distinctions
between filtration and osmosis. At p. 405, it is stated that
" the amount of contraction of each muscle depends upon its
length," instead of upon the length of its fibres. At p. 377,
vol. II, it is stated that the fatty liver of the goose " constitutes
paté du foie gras," all other ingredients being ignored. The
statement on p. 51, that when " we drink with lips immersed
the air is removed from the mouth by inspiration, and the
fluid flows in by atmospheric pressure," is quite wrong, for
the suction by which drink " with lips immersed," or as
infants at the breast, is purely muscular and as independent
of respiratory movement as the grip of a bull dog is. At p.
399, " in cases of disease the colour (of the urine) may be
altered. Thus it is usually pale in diabetes, milky from
admixture with chyle, dark-red and smoky from the presence
of blood or blood pigment, or it may have been a greenish
hue from the presence of bile," is not merely an instance of

slipshod construction, but makes no distinction between essential alteration in colour and changes due merely to admixture of adventitious colouring matters. At p. 498, motor fibres of nerves are said to carry "impressions from the cord outwards," where probably "impulses" was intended. At p. 541 it is stated that "the brain is contained in an osseous case of which the total capacity is variable," another instance of saying what one does not mean. At p. 668, the sentence "the mucous membrane of the tympanum consists of connective tissue," has evidently undergone spontaneous amputation. At p. 725, the tendo Achilles is called a ligament. We noticed other instances; but it would be making too much of small matters to mention them all. They are not grave errors, but they may puzzle beginners. Of distinct errors there are but few, and these mainly in the lettering of diagrams. At p. 763, however, there is a noticeable one, "when several (human) fœtuses are developed, each is expelled with its own placenta." An error in fig. 434A, vol. II, p. 710, where the thyroid cartilage is shown pulled down by the crico-thyroid muscle, instead of the cricoid being pulled up, is probably due to want of careful examination of a borrowed diagram, and to a similar cause is probably due the differences between pulse-rate of certain animals (vol. I, p. 264), and the frequency of cardiac pulsation in the same animals (p. 213). The following, from p. 766, vol. II, looks as if some cuttings had got mixed. " Milk contains 4 to 6 per cent of milk-sugar. This changes into lactic acid by fermentation when milk sours. The casein precipitated carries fatty particles with it, so that cheese consists of fat and casein. By the action of hydrochloric or sulphuric acids it is changed into lactose or galactose." Finally, our student, not wholly forgetful of his logic, would prove a charge of having committed a grave error, a "maxie" in fact, from p. 183 of vol. I, where ferments are "classified under three divisions—(1) the soluble ferments; (2) the organised ferments; and (3), according to the nature of the chemical changes they are capable of exciting," a clear case of cross classification.

When we abandon the point of view of the "college student," or, as the "pure physiologist" might perhaps call him, "the bread and butter student," we are bound to give the book much praise. Almost all of the matter is excellent, though the fact that many of the chapters are adapted from scattered articles by the author in the *Encyclopædia Britannica*, gives an impression of occasional want of coherence among them, and an occasional slight tendency to

repetition. The predilection of the author for the physical side of the science of physiology is very pronounced, and in some of the chapters the multitudinous details of physical investigations crowd out the exposition of the laws these investigations reveal. Another result of this predilection is, that some subjects which do not lend themselves to such or similar methods of investigation are apt to get scant notice. For instance, the chapter on Sleep and its associated pheno- mena is a mere note. Secretion is merely noticed here and there in relation to other subjects, though it should be worthy of a full discussion. In more than one place a special chapter is actually promised, but it does not exist, and the index reference under the heading of Secretion merely guides us to a few, not nearly all, of the scattered references under other subjects. The fullest reference to the subject, at pp. 58 *et seq.* of vol. II, in the chapter on the Salivary Glands, is not noted in the index. We have been disappointed, too, in our expecta- tion that we should find in the book some reference to the subject of Ptomaines and Leucomaines, in which a good deal of work has been done, and which promises to be of some import- ance, but there is no mention of them in the index to either volume, and so far as we can see the word ptomaine only occurs once, and that casually, at p. 430 of vol. I.

Still, the greater part of the work is admirable, and to older readers, who can afford to skip portions, it will be fascinating, as reflecting the spirit of the age in things physiological, and revealing methods by which wonderful results have been obtained, and from which great advances in precise knowledge may be expected. Let such a reader compare the methods of research so fully and clearly described here, with those men- tioned in the text-books of his own time, and note also how many of the phenomena of vital action can now be dealt with in terms of mathematical precision, and he must admit that the advance has been prodigious. Anatomy, physiology, and embryology, having ceased to be anthropocentric, the theory of evolution and the comparative method have enabled us to study the complex organs and functions of the human body in simpler terms; modern chemistry has made the formulæ of organic substances instructive diagrams of atomic relation- ships instead of mere arithmetical summations of a number of molecules; microscopes, and the methods of using them, have been improved, till protoplasm is no longer regarded as a homogeneous mass, and the cell nucleus has become a complex organ; vivisectional experiments and pathological observa- tions have created new territories on the surface of the brain,

and have taught us that a cross section of the spinal cord displays more regions than the surface of the brain was once supposed to; and the graphic method, with its improved instruments, has enabled us to analyse the swiftest and briefest movements, and observe their phases in periods even of the five-hundredth of a second. To quote even a few examples of the advances made on these lines, and other lines might be mentioned, would take too much space, but this book is a storehouse of wonders of that kind.

Vol. I is devoted to General Physiology, contains 516 pages, 318 diagrams, and an index of its own, and is, in fact, an independent work.

Section I is a General Introduction, and has chapters on Matter and Energy, and General Principles of Biology, and is a very able summary of modern views upon these matters.

Section II. The Chemistry of the Body. In this section the author acknowledges assistance from Professor W. Dittmar, F.R.S., and from Dr. MacMunn, the latter having enabled him to discuss the question of animal pigments "more fully than has yet been attempted in any text-book of physiology." It is all very learned and really interesting, but we have already stated our opinion that the most of it had better been elsewhere, for some of it, at least, looks chaotic, and much of it is conjectural, and its practical bearings are not yet clear. The chapter on " the Chemical Reactions in Living Organisms" is good, and really contains all that is yet useful. The chapter on Fermentation is not so satisfactory. The mode of making pure cultivations of schizomyceta (p. 194) is very imperfectly described, Dallinger's method of educating schizomyceta to withstand high temperatures is not mentioned, and the fourth condition necessary to prove a micro-organism to be the cause of disease is omitted (p. 199).

Section III. The Physiology of the Tissues, begins with a good historical introduction, describing the methods and discoveries of successive generations of Physiologists. The second chapter, on Fecundation, &c., we think would have found fitter place alongside that on Reproduction in the second volume. Be that as it may, the chapter contains an admirable description of the changes in cells and their nuclei before and after fecundation, the best account we have seen, and very well illustrated. The succeeding chapter is a very able and interesting discussion of " Theories as to the Physiological Basis of Heredity," in which the most recent views are discussed, and the most advanced discoveries in cell life are described, and the author advances some original and thoughtful

views on the subject. To discuss this chapter fully would take all our space. It well repays careful reading.

Section IV. The Contractile Tissues. Here the author has got together perhaps all that is known about muscle, its action, structure, chemistry, &c., and explains very clearly the many complicated apparatus devised for investigating its properties. Chapters on the Graphic Method and Electrical Apparatus are very full and abundantly illustrated, and, we think, a great deal of matter scattered elsewhere through both volumes might well have been collected here into a special section. Space would have been saved, and the number of diagrams of apparatus, many of them very much alike, might have been considerably reduced. Chapter xx, on " The Phenomena of Electric Fishes," gives very fully and clearly the results of the most recent researches, well illustrated by diagrams. This chapter is a valuable one, as it brings together much infor- mation hitherto scattered among the proceedings of various Societies, &c.

Vol. II is on Special Physiology, and contains 803 pages, 485 diagrams, and an index of its own. We think it a pity that the two volumes have separate indices. If that in Vol. II had given the references to Vol I also, it would have been a much more convenient arrangement.

Section I. Nutrition, Food, Digestion. The author's remark (p. 2) that " the student should habituate himself to the observation of diseased conditions from the physiological point of view "—a principle which, we think, has guided medical teachers, in Scotland at least, for a long time past— suggests the reflection that it would be very profitable to the students if more teachers in the medical faculty would train themselves to the observation of normal conditions and pro- cesses from the pathological point of view. Pathology might then be to the student something more than a matter of autopsies and microscopic sections. For instance, in this chapter there are no hints as to the chemical aberrations of digestion in cases of dyspepsia, and the special conditions of digestion in infants are barely mentioned, the practical bearings being ignored. The chapter on Food and Dietetics is very full and very scientific, with the usual tables of percentage compositions, dynamic values, &c. We are amused to note that to a Scotch professor it is a known fact that " oats constitutes a good element of diet for horses."

Section II. Absorption. This section is full and clearly written.

Section III. The Blood. This section deals with the blood

as a tissue, and is a very useful one, as the methods of examination of the blood are fully described, and the most recent discussions are reviewed. We note in passing that at p. 166 the term "diapedesis" is restricted, by implication at least, to the migration out of the vessels of white corpuscles only, a definition which will not be generally regarded as correct.

Section IV. The Circulation of the Blood. This section is very good. The subject lends itself to the graphic method, and is treated very fully and clearly; the most recent researches, such as those of Roy and Gaskell, with the beautiful and delicate apparatus used, are cleverly summarized. The rhythm and force of the heart, the blood pressure in different vessels, the velocity of the blood stream, &c., are all very carefully discussed; and it is very interesting to see how many of the results of experiments can be stated in terms of mathematical precision. The influence of the nervous system is fully examined, and the whole matter is summed in a page and a half in a masterly way (pp. 244-245). We were interested to see what were the author's views as to the causation of the first sound of the heart, and found at p. 215 the following :— "There is no doubt it is a *muscular sound*, varying in quality from the ordinary sound of a contracting muscle, from the arrangement of cardiac fibres. The sound is modified by the vibrations of the tense auriculo-ventricular valves. The fact that the sound has been heard from an excised heart, still pulsating, but empty of blood, supports this explanation, and there is further the pathological evidence that in cases where muscular walls have been weakened by fatty changes, . . . the first sound may disappear. It may be said to this view that derangements of the valves affect the first sound, and that, therefore, it cannot be due to muscular action alone. But the passage of fluid through an orifice, such as is formed by diseased mitral valves, is quite sufficient to produce a sound which will entirely mask the normal muscular sound; and it has always appeared to the present author that the blowing sound, heard with disease of the valves, is an abnormal sound different from the normal first sound, and of sufficient intensity either to conceal it, or to produce a sound of the intensity and quality characteristic of a blowing murmur."

Section V. Respiration. This is good, especially the chapter on Innervation of Respiration. That subject is very fully discussed, and the conclusion " summarised as follows :—

" 1. Upper brain tracts. Liberate rhythmic movements, like the *vagi*, whose action they replace.

"2. If the upper brain tracts are at rest, while the *vagi* act alone, we have Cheyne-Stokes' breathing" ("At rest" as in apoplexy, for instance!).

"3. The pulmonary branches of the *vagi* act continuously, and they are the chief regulators of breathing.

"4. The sensory nerves of the skin, by reflex action, excite respiratory movements, but they cannot replace the action of the *vagi* and of the upper tracts.

"5. The fifth cranial nerve, the superior laryngeals, and the gloso-pharyngeal nerves, act occasionally as inhibitory nerves of respiration. They do not act in normal respiration.

"6. The fifth cranial nerves, the superior laryngeal, the olfactories, and the splanchnics, slow respiration, and stop it in the state of expiration."

Section VI. Assimilation or Nutrition. This is a very brief one, out of whose sails the wind has been taken by previous sections (in vol. I). It is very good as far as it goes, but might have been much extended with advantage; if the graphic method could have been brought to bear, it un- doubtedly would have been.

Section VII. Glycogenesis. Contains nothing new.

Section VIII. Excretion. Deals with the excretory organs not previously discussed—viz., the skin and the kidneys. The chapter on the composition of the urine and urinary analysis is very full and should be useful. In discussing the mechanism of secretion of urine, the author argues that "Ludwig's theory does not attach sufficient importance to the activity of epithelium lining the tubes," and states his views very clearly as follows (p. 428)—"There can be no doubt that the epithelial cells excrete, or rather, first secrete such matters as urea, uric acid, and possibly even a portion of the salts, and that these are flooded out of the convoluted tubes by the water separated mechanically in the glomeruli. The cells, however, are stimulated only when the amount of these substances in the blood reaches a certain height, and this will be largely determined by the quickness or slowness of the stream in the renal capillaries, and by the amount of water in the blood."

Section IX. The Income and Expenditure of the Body. Is a very bald and brief one.

Section X. Animal Heat. Is not satisfying; it seems imperfect, and not up to date.

Sections XI and XII, on the Nervous System and the Senses are the best part of the work, and are in every way masterly productions. The author has made these

subjects his own, and these chapters are patterns of careful exposition and clear arrangement of multitudinous details, as well as of thoughtful and suggestive discussion of general laws, in the light of the most recent work of biologists, histologists, anatomists, physiologists, psychologists, physicists, chemists, electricians, and mathematicians. Considering the complexity of the subjects, and the many sources from which information bearing upon them is to be sought, and the many theories afloat regarding them, one cannot but admire the clearness and coherence of these chapters, in which, probably, nothing that is really important has been omitted. The only imperfect chapter, we think, is one we have already alluded to—namely, that on Sleep. From a medical point of view, that subject would repay much more attention than it gets in this and many other works on physiology.

Section XIII. Voice. Is brief, but sufficient.

Section XIV. Animal Locomotion. Is almost all from Weber and Marey. There is a mere passing reference to the results of instantaneous photography by Muybridge, and others, but no acknowledgement of new information from them.

Section XV. Reproduction. Here (p. 734) the author will probably startle a little some of his older readers, for, speaking of Spontaneous Generation, he says: " It is unphilosophical to assert the impossibility of its occurrence now or at some past time. The intimate relations known to exist between physical, chemical, and vital phenomena, depending on the laws of the conservation and transmutation of energy, and the theory of evolutional development, indicate the probability of abio-genesis, and it is one of the problems of biological science to ascertain the conditions in which this may occur." That may be so, but a physiologist who wishes his students to do useful work will do well to cap that quotation with this from p. 9 of vol. I :—" The physiologist is still far from the discussion of such matters." This section, really complementary to Section III, chapter iii, in volume I, is made crabbed and imperfect looking by the frequent necessity for referring back to that chapter. It would have been much better if the two had been welded into one, or rather, if the subject had not been thus awkwardly split up. While writing this we observe that a reviewer of this work in the *British Medical Journal*, 15th February 1890, complains of the way in which the subjects are arranged. The objection had already suggested itself very strongly to us. It is a great mistake to weary beginners with long discourses on the chemistry of the tissues, nutrition, metabolism, the vital phenomena of cells, &c., which

to them are abstruse and apparently useless. Their studies should begin with subjects which are easily demonstrated, and the practical bearings of which give them a vital interest. The nervous system is one of the dominating subjects in physiology, and, properly expounded, as in this book, might give students a happy introduction to the study of physiology, very different from such as that given by the opening chapters of vol. I of this work. Besides, beginners are really not competent to study these more abstruse chapters at first, for it is only after they have got a good general idea of the nervous, circulatory and respiratory systems, that they can see the bearings of the chapters on nutrition, excretion, &c., and it is really only to advanced students that the chapters on chemical constitution of tissues, pigments, &c., are interesting or suggestive.

We began by saying that this book is not a great work; but we are bound to say that it has the elements of a great work in it, and we believe that in its present form it will be most useful, and hope that in future editions, which we hope will not be much bigger, the defects of the present edition will disappear. To medical students it will be most useful, part of it as a text-book, part of it as a book for reference; to general medical readers it will be interesting and very suggestive; and to workers in laboratories and to histologists it will be invaluable.

It would be unfair to close our notice without referring to the illustrations. They are all good, and the histological ones are of great beauty. The author purchased the electrotypes of the woodcuts in Professor Philipp Stöhr's *Lehrbuch du Histologie*, and has used them freely, and at the same time purchased the right of translating Dr. Stöhr's work, and has incorporated it with his own. He could not have got finer illustrations; for, while they are all accurate drawings of actual microscopic preparations, they have all the clearness of diagrammatic drawings, and their delicacy of execution and clearness of printing have rarely been equalled. The author is endowed with exceptional skill in the construction of diagrams, and uses them freely and often with happy effect in the description of complicated physiological structures—as for instance in the chapter on the Nervous System of the Senses. Certainly, no text-book with which we are acquainted is so beautifully illustrated, and none more copiously.

The printers and bookbinders have done their part of the work very well indeed.

The History and Pathology of Vaccination. By Professor
EDGAR M. CROOKSHANK. London : H. K. Lewis.

THIS work consists of two large volumes, numbering together
over a thousand pages, printed in large type on handsome
paper, and illustrated by more than twenty excellent coloured
plates. Volume I is entitled " A Critical Inquiry." The first
three chapters are devoted to Small-pox Inoculation ; the
fourth to " Haygarth's System for Preventing Small-pox ; "
the next four to a History of Vaccination and of Jenner ;
other six to the Sources of Vaccine Lymph ; and the last two
to the introduction of Vaccination into Foreign Countries, and
to its Progress in England. Volume II consists of a series of
selected essays, and includes Jenner's three essays, and various
papers by Pearson, Woodville, Birch, and other early writers
on the subject, besides the more recent monographs on cow-
pox by Bousquet, Estlin, Ceely, Badcock, Dubreuilh, &c.

Briefly stated, the author's views follow up those of Dr.
Creighton, whose writings have evidently been carefully
perused by Professor Crookshank, the conclusions being that
Jenner was dishonest, and that vaccination is valueless.

The parts of the work which are most likely to attract
attention are those relating to the history of vaccination and
to the sources of vaccine lymph. Regarding the rural belief
in the virtues of cow-pox, which prevailed in pre-Jennerian
days, Professor Crookshank says—" It was evidently failure
in attempting to inoculate small-pox on the arms of those
who had recently contracted cow-pox, which gave rise to
gossip among the dairymaids, who laid the foundation of the
popular tradition. The dairy-folk could not be expected to
distinguish between inoculated small-pox and small-pox caught
in the natural way, and the fact that some cow-poxed milkers
were proof against inoculation was so interpreted as to afford
a foundation for the popular belief that they were ever after
secured from the danger of catching the small-pox." In this
extract there seems an effort to reduce to the lowest possible
value the worth of the tradition in question as an argument
in support of vaccination, and to do so by ignoring the actual
facts of the case as they may be read in the essays contained
in the second volume of the work under review. That the
milker's judgment was founded merely on recent cases is a
speculative opinion which may possibly be capable of defence,
but as a matter of fact there is ample evidence that it was not
only those who had *recently* contracted cow-pox, who were
insusceptible of small-pox inoculation. Among Jenner's cases

we find that Joseph Merret had cow-pox in 1770, and was unsuccessfully variolated in 1795 ; that in the case of Sarah Portlock the corresponding dates were 1765 and 1792 ; of Mary Barge, 1760 and 1791 ; of Hester Walkley, 1782 and 1795 ; that John Phillips had cow-pox at the age of 9, and failed to take inoculated small-pox at the age of 62. Nor is there any good reason to assert that the tradition belonged to the dairymaids, rather than to the doctors. If it be a fact, as Mr. Crookshank seems to admit, that unsuccessful inoculation of small-pox in persons previously cow-poxed was so frequent an occurrence that the sequence was apt to be noted by the untrained intellect of the farm servant, the same sequence would surely also strike the medical man, who would have in his mind long lists of cases on which to found a judgment. Very likely, in some instances, the milker would first notice the connection, and point it out to the doctor, but Pearson's *Inquiry into the History of Cow-pox*, published shortly after the appearance of Jenner's first treatise, shows that quite a number of inoculators in the dairy districts had formed the opinion that cow-pox prevented small-pox; and, indeed, Mr. Crookshank is not slow to adduce certain evidence that a practitioner named Nash, so early as 1781, committed to writing views which, had they been at that time given to the world, might have forestalled, to some extent, the work which was left to Jenner to do nearly twenty years afterwards. And the belief in the virtues of cow-pox existed, not only in England, but also in Ireland, and in some parts of the Continent of Europe where the English and Irish rural traditions —themselves quite independent of each other — would be alike unknown. Unquestionably this prevalence of the opinion in diverse localities, among both doctors and dairy-folk, is a fact not to be slurred over by the opponents of vaccination, but demanding to be faced fairly, and to be explained away, if that be possible. Talking of the manuscript alleged to have been left by Nash, and of the views, more or less similar to Jenner's, contained therein, Mr. Crookshank says—" It was rumoured that Jenner was acquainted with Nash." The inuendo is obvious. But, in justice to Jenner's memory, it would have been better had the passage on which the assertion is founded been given. Before the House of Commons Committee in 1802, Mr. R. Keate, in answer to a question, said—" I heard from Mr. Battiscombe yesterday, that he believed he had heard Mr. Nash and his sister mention the name of Dr. Jenner ; but was not at all certain that it was this Dr. Jenner." That, and no more,

seems the foundation for Professor Crookshank's statement,
" It was rumoured." The modicum of credit due to Benjamin
Jesty, a farmer who inoculated with cow-pox his wife and
two sons in 1774—to which episode the author devotes much
space—may be safely granted without in any way lessening
our estimate of the value of the work of Jenner. That
" coming events cast their shadows before" is as true in
medicine as in all other departments of human knowledge.

Turning to Jenner's " Life and Letters," we find the same
tendency to be-little everything that is usually set down to
his credit. The question of how long and how much Jenner
thought and laboured over vaccination is discussed. In that
connection Professor Crookshank sets great store by a state-
ment of Fosbrooke's that, in 1795 or thereby, apparently
during convalescence from an attack of typhus, " Jenner used
to amuse himself with extemporaneous effusions in poetry,"
because " he was not then burdened with the labours which
vaccine has generated," and Mr. Crookshank, reading this as
meaning " *up to* the year 1795," wonders how Simon could
assert that for thirty years Jenner had incessantly thought,
and watched, and experimented ! But even if we grant the
" up to," it seems clear enough that Fosbrooke's reference was
to the labour of voluminous correspondence, of debate, of
experiment, of visits to London, and so on, which followed the
publication of the Inquiry in 1798.

When Woodville, soon after the publication of Jenner's
Inquiry, started his vaccinations at the Inoculation Hos-
pital, eruptions speedily began to appear on many of the
vaccinated. Jenner shrewdly judged that this was due to the
unintentional inoculation of small-pox, and thought the
occurrences hurtful to the new practice, as leading to the
opinion that vaccination was little better than variolation.
It would appear from a statement of Creaser's that his
opponent Pearson shared with Jenner this latter opinion. But
our author thinks that the accident " was, on the contrary,
the most fortunate occurrence for Jenner and his cause," for,
he says, " the variolous test, in Jenner's cases, had been far
from convincing," but Woodville's cases stood the test because
they had really been already variolated, and the first sixty
tests convinced many persons of the value of cow-pox. The
argument is ingenious, but will not bear examination. No
evidence is given that Jenner's cases did not stand the
test. In the " Inquiry " Jenner gives a statement of about
twenty persons who had had accidental cow-pox, and were
subsequently found insusceptible to variolation, and, in addi-

tion, there were others who had purposely been subjected to
the experiment. Then, as to Woodville's cases, seeing that he
continued to employ the test, with the same result as before,
long after he had got over his difficulties as to eruptions, and
seeing that many other vaccinators, both at home and abroad,
made similar experiments, and with equal success, surely it is
obvious that it would have been better for vaccination had
Woodville's first cases never occurred, and had he begun at
that point where he ceased to confuse small-pox with cow-pox,
but still practised the variolous test, with a result no less
satisfactory than before, as an evidence of the protective
power of the new method.

On page 142, the reader encounters, with some surprise,
the double statement (1) that the variolous test broke down,
and (2) that in the very year that gave birth to his
" Inquiry " Jenner was aware that it would break down.
If the author, in quoting in proof of the latter part of this
statement part of a letter of Jenner's, had included what
he has excluded, his readers would not have been misled as to
what Jenner meant when he wrote, " But here, my dear friend,
here is the rub." For " the rub " consists entirely in part of
what Mr. Crookshank has omitted, and not at all in the
passage which he has inserted, as can be seen at once by
reference to p. 154, of vol. i, of Baron's *Life.*

In this connection, however, the main question is, not what
Jenner thought of the variolous test, but, How is the variolous
test explained, or explained away, by Professor Crookshank ?
The reader, therefore, looks with interest for the chapter or
chapters devoted to proving the assertion that the variolous
test broke down. But he looks in vain ; for the whole
subject is passed over in a single sentence, thus—" A sufficient
answer to the first question [Were persons after vaccination
insusceptible of *inoculation* with small-pox ?] is the fact that
Jenner discountenanced the variolous test as unfair, and it
is therefore unnecessary to detail the cases in which inocula-
tion of small-pox succeeded after vaccination." The contempt
with which Mr. Crookshank usually treats Jenner is at
singular variance with the extraordinary importance that he
here attaches to this alleged attitude of his on the variolous
test. Unfortunately Jenner's words on the subject are not
quoted, and no reference to them is given. Perhaps, however,
the following statement, published in 1808, was in Professor
Crookshank's mind :—"At the commencement of vaccination,
I deemed this test of security (*i. e.,* the insertion of small-
pox matter) necessary ; but I now feel confident that we have

one of equal efficacy, and infinitely less hazardous, in the re-insertion of the vaccine lymph " (Baron's *Life*, vol. ii, p. 270). Then, on p. 339 of Baron, we learn that Jenner wrote, " I will just remark that the fairest of all tests is exposure to variolous contagion ; this is the natural test, inoculation is not." This observation occurs in a private letter (written in 1804) to a friend, published for the first time forty years after the introduction of vaccination, and fifteen years after the death of its author. These extracts appear to contain the whole foundation for the position taken up—that, as Jenner had discountenanced the test, Professor Crookshank did not need to discuss it ! And it is in this fashion that he dismisses, as unworthy of notice, the evidence which satisfied Cline, and Willan, and Lettsom, and Baillie, and all the foremost men in the medical profession, not only of England, but of Europe and America.

The historical part of the work bristles with matter open to criticism. From beginning to end it is entirely want- ing in sympathy for Jenner's difficulties. We know now that vaccination is not absolutely certain as a preventive of small-pox, and that much depends on the efficiency of the operation. This was then unknown. But Jenner did know that the cows' teats were liable to more than one eruptive disease, and he believed (rightly too) that only one of these was capable of preventing small-pox. He also soon saw reason to conclude that lymph, active enough to start with, might undergo putrefactive or other changes, rendering it useless, and that matter taken from an ulcer following cow-pox was equally untrustworthy. Is it unpardonable that, applying the name " spurious cow-pox " to any local effects produced by inoculation with such materials, he should have attributed to the use of " spurious cow-pox " many failures which now-a- days we would set down either to imperfect vaccination or to the wearing out, through time, of the protective influence of an originally correct operation ? But Professor Crookshank makes no allowances of that sort.

The pathological part of the work begins with Chapter IX, on Human Small-Pox as a source of " Vaccine Lymph," and the subsequent chapters are devoted to other sources from which he alleges lymph has been derived—Cattle Plague, Sheep Small-Pox, Goat-Pox, Cow-Pox, and "Grease." Regard- ing human small-pox, he holds that the resulting disease on the cow, in the experiments of Ceely, Badcock and others, was variola, not vaccinia, and that the thirty or forty thousand cases " vaccinated " with Badcock's lymph were in reality

variolated. At the same time, he holds that Badcock's patients did not spread the disease by atmospheric infection, and that, indeed, Badcock's practice proves that "a strain of benign variolous lymph can be cultivated by judicious selection, and completely deprived of any infectious properties." It would thus seem that Professor Crookshank is willing to admit that the protection against infection afforded by the milder methods of small-pox inoculation can be obtained without the risk of spreading the disease. Clearly, too, it is not open to him to use the stock argument of anti-vaccinationists regarding the cause of the decline of small-pox in the present century. It is urged that its prevalence, before vaccination, was due to the spread of the infection by inoculation. But the mild methods of Dimsdale and Sutton were in vogue during the latter part of the century; and surely these methods were not more likely than Badcock's to be causes of such epidemics as were then the rule. But even if, for the sake of argument, it be admitted that some part of "vaccination" in this country is still performed with lymph originally variolous, that would not for one moment affect the question as to the powers of cow-pox to confer immunity from small-pox. The statement that at one time (nearly sixty years ago) matter from cattle plague was used for vaccination in India is certainly a curious one, agreeing though it does with the notion of Murchison and of Ceely, who, in the outbreak in this country in the sixties, opined that cattle plague was really a malignant form of cow-pox. But Seaton, in his handbook, urges as to India, that the native name applied to cattle plague was used indiscriminately for various cow diseases, and may have included the true cow-pox. Passing over the references to sheep-pox and goat-pox, we come to "Cow-Pox as a source of Vaccine Lymph." Here the author's views are pretty nearly identical with Dr. Creighton's. Founding, like Creighton, chiefly on the observations of Ceely, he holds that cow-pox is a very severe disease, causing on the cows' teats deep ulcers and sloughs, and on the milkers' hands similar ulcers, with much inflammation, axillary abscesses, &c., and, indeed, that its analogue in man is not small-pox, but great-pox. This, of course, was not Ceely's opinion; but of course, also, Professor Crookshank has a right to form his own opinion from Ceely's facts. At the same time, in giving a synopsis of Ceely's statements, it would certainly have put Professor Crookshank's readers in a better position for forming their opinion from Ceely's facts, had the following words of Ceely's been included in the synopsis between two sen-

tences in the middle of p. 345—" But considering the general mildness of the disease, the fact of its being at times in some individuals entirely overlooked, and that its topical severity depends almost wholly on the rude tractions of the milkers," &c. This, indeed, is where most people will part company with the author. He allows nothing for the fact that if cow-pox be a specific disease, it must necessarily, on the cow's teats, be complicated not only by the inflammation and ulceration due to "the rude tractions of the milkers," but also by the obvious sources of contamination with foreign and filthy substances of all kinds, both from the milker's hands and from the unclean surroundings of the byre. In the same way, it must be clear enough to every pathologist that the disease, when accidentally transferred to the dairymaid's fingers, will there be as likely to gain as to lose in severity from causes independent of itself. There will be the added dirt from the daily occupation, and there will also be the tendency of the vesicles to burst and leave ulcers on parts so mobile and vascular, and so exposed to accident. Nor is it possible to suppose that the transference of lymph from such hands to a child's arm would be unaccompanied by the transference of some of the dirt, and of the products of inflammation. It does not, therefore, need any theory as to the natural severity of pure cow-pox to account for occasional ulcers and inflammations in the early removes from the cow, especially if in regard to Jenner's early difficulties, we recollect the further fact that it was only by experience that he learned to use eighth day lymph, and that he sometimes took matter so late as the twelfth day. Nor will it do for Professor Crookshank to adopt, as he does, Dr. Creighton's grotesque theory that when erysipelas or ulcers occur now-a-days, they are due to reversion to the early type of cow-pox, as exhibited on the cows' paps and the milkers' hands. It is a matter of experience that such accidents may result in wounds due to other causes than cow-pox—to accidental abrasions, scratches, &c., where there is no original type to revert to; and it is also a matter of experience that now-a-days on a child's arm, as in Jenner's time on the milkers' hands, dirt and neglect and the disturbance of the crust will of themselves set up the complications interpreted by Mr. Crookshank according to the far fetched theory of Dr. Creighton.

But above all, the question remains, Is this subject of vaccination to be decided by any such theorisings, and is the practice to be rejected because opinions differ as to the nature of cow-pox ? Let cow-pox be what it may—let it be

cow small-pox, as Ceely held; or the antagonistic principle of small-pox, as Sir Thomas Watson urged; or let it have been originally as severe a disease as Professor Crookshank says it was—are we on that account to give up a procedure which has been demonstrated to prevent and to mitigate one of the most loathsome and fatal maladies to which humanity is subject? Vaccination had its first foundation, not in theories, but in the experiences of the dairymaids and of the country doctors. The profession and the public were converted to it by the thousands of experiments that were made of its efficacy—both by the application of the variolous test, and by the intentional or accidental exposure of the vaccinated to the infection of small-pox. And it has maintained its position, in the estimation of the profession, by the enormous weight of statistical evidence, and of every day experience of its prophylactic powers. Indeed, if we are to place in one scale the speculations of Dr. Creighton and the support they receive from Professor Crookshank, and in the other scale the plain narrative of facts detailed in Dr. Barry's report of the recent epidemic in Sheffield, the conclusion cannot be avoided that the latter irresistibly outweighs the former; and that our daily practice must be guided, not by the question as to what cow-pox is, but by the fact as to what vaccination does.

Chronic Bronchitis and its Treatment: a Clinical Study. By WILLIAM MURRELL, M.D., F.R.C.P., Lecturer on Pharmacology and Therapeutics at the Westminster Hospital. London: H. K. Lewis. 1889.

CHRONIC bronchitis is apt to be the bane of physicians to hospital dispensaries and of the medical officers of societies, who have numbers of cases of this kind every winter for months on their hands. To these and to general practitioners, as well as to their patients, the hope that is born of a perusal of Dr. Murrell's book will come as "a boon and a blessing." The results obtained by him are represented in such a glowing light, that they cannot but feel that they have at last some means within their reach with which to combat the perpetually recurring distress of the bronchitic patient.

In the out-patient room of the Westminster Hospital for ten years past, Dr. Murrell has been trying various remedies for chronic bronchitis outside of the ordinary expectorant mixtures, and he has from time to time published papers on the subject in the medical journals. In the volume before us he has given an account, with clinical details, of all his various

experiments. The first chapter is devoted to treatment by sprays, principally of ipecacuanha wine, but also of antimonial wine, tinctures of lobelia, cantharides and jaborandi, and of solution of iodide of potassium. He speaks very favourably of the good effect of the ipecacuanha spray (5 cc.-30 cc. diluted with twice the quantity of water, daily) in relieving dyspnœa and cough, but he points out that it is not advisable to use it in cases in which the asthmatic element predominates over the bronchitic, as in these it shows a tendency to increase the dyspnœa. In some cases antimonial wine also proved service-able, and the same may be said of a two per cent solution of iodide of potassium.

A most interesting chapter follows on Tar and its Allies, in which Dr. Murrell details his experience of tar in various forms, pill, mixture, &c. From what he says of the syrup it would be waste of time to endeavour to improve upon it. " A mixture of two parts of the syrup of tar and one part of syrup of Virginian prune is an ideal mixture. In its presence mara-schino, curaçoa, and even green chartreuse naturally take a back seat. I cannot say more in favour of a cough medicine, except that its effects are really marvellous, and that the chronic bronchitic who has once tasted it yearns for it."

Terebene, pinol, cheken, cubebs, chloride of ammonium, and other inhalations receive due notice, their respective advan-tages and disadvantages being clearly indicated by reference to cases.

This volume is a small one (and, by the way, would have been none the worse of a more careful revision for the press), and no practitioner will regret the time spent in reading it. He will get many hints of much service to him ; he will lay it down with a feeling of confidence in the treatment of chronic bronchitis which, we hope, experience will confirm ; and he will now and again derive as much amusement from it as from the pages of Mark Twain.

Text-Book of General Therapeutics. By W. HALE WHITE, M.D. London : Macmillan & Co. 1889.

WE have here a series of lectures, thrown into the form of a text-book, on " Modes of Treatment not falling under the Heading of Drugs "—certainly a wide enough field, when we bear in mind the prominence in treatment now given (very properly) to diet, regimen, and, in short, to the very aids to recovery discussed here. The idea is an excellent one, inasmuch as these therapeutic methods are not usually to be found brought together in one treatise, but are scattered

far and wide in medical literature, in books and journals, in such a way as to render consultation and reference a matter of some difficulty. The scope of this work will be indicated when it is stated that it includes discussion of such subjects as medical climatology, treatment by compressed air, Œrtel's method of treatment for chronic cardiac diseases, diet, treatment by water used internally, externally, and as an antipyretic, lavage, massage, the Weir-Mitchell method, venesection, electricity, hypnotism and metallo-therapy (to which too much consideration and prominence are given), suspension in spinal diseases, and so on. Not only are the needs of the student studied, but here also the practitioner will find innumerable hints as to what is, in the majority of instances, the most important part of the management of a case. The whole section on diet especially, is suggestive and serviceable. We have written enough to show that Dr. White's work occupies a distinct field of its own; it only remains to be said that the performance is fairly equal to the need and to the promise, and that no one will regret adding the book to his library.

Traité Elementaire d'Anatomie de l'Homme avec Notions d'Organogénie et d'Embryologie Générale. Par CH. DEBIERRE, Professeur d'Anatomie à la Faculté de Médicine de Lille. Tome Premier: Manuel de l'Amphithéatre. Paris: Felix Alcan. 1890.

THE first volume of Professor Debierre's text-book of anatomy is devoted to the skeleton, joints, muscles, vessels, and nerves, and contains about 960 pages of letterpress and nearly 400 engravings; it is therefore needless to say that the descriptions of the different systems treated of are exceedingly complete. Not only are the details of normal anatomy clearly and fully set forth, but under the separate headings the varieties of structure and relation are described, and discussed upon scientific principles, and, in addition, the embryology and histology of each system are elaborately explained. The systematic rather than the topographical arrangement is adopted, but instruction as to the display of the several structures is, where necessary, included. The plates are a special feature of the work; most of them are beautifully coloured, and all are well executed, and it may be said of them that while they require little explanation they are yet very fully explained. The student and the professional man will find in this work all that they require, and we can with confidence recommend it.

We shall await with great interest Prof. Debierre's second volume, which is to appear in May; if the same high level be maintained in it as is shown in its predecessor, we shall have to congratulate the author upon the production of the most important of modern additions to our text-books.

On the Animal Alkaloids, the Ptomaïnes, Leucomaïnes, &c. By Sir WM. AITKEN, Knt., M.D., LL.D., F.R.S. Second Edition. London : H. K. Lewis. 1889.

THIS second edition of Sir Wm. Aitken's work affords interesting indications of the change of opinion which has been forcing itself on the mind of such a cautious and conscientious observer as the genial author of the work before us. The little book is loaded with facts and is full of interesting comments. If we might venture on a criticism on the work, we would say that there is perhaps too little discrimination as to the value of the various facts and opinions quoted. The statements of certain obscure French authors, for example, are given to the effect that "anthrax is not a parasitic disease," as if these had weight against the great body of evidence which has established so fully the natural history of the microbe and its connection with the pathological process. In the midst of it all Sir William finds himself more favourably disposed towards the bacteria than in the former edition, although the persisting estrangement of his mind may be judged of by the fact that he writes of a "'bacillary' pathology," and that he refers to "minute micro-organisms in the form of bacilli, bacteria and spores."

The Year-Book of Treatment for 1890. London : Cassell & Company, Limited.

THE contents of this Annual, including reports of the most striking contributions to therapeutical literature—medical, surgical, obstetrical, and special—with, in many instances, valuable criticisms of the same, cover the period from the close of 1888 to the beginning of September, 1889. Much discrimination has been displayed in the selection of topics : while subjects of but passing interest and minor importance are excluded, or are dealt with briefly, very little of any value has been overlooked. As a handy, condensed, and carefully selected series of notes and comments on therapeutic progress in 1889, this volume is to be very highly commended. It is quite equal to its predecessors, and this is not faint praise.

MEETINGS OF SOCIETIES.

MEDICO-CHIRURGICAL SOCIETY OF GLASGOW.

SESSION 1889-90.
MEETING VIII.—31st JANUARY, 1890.

The President, Dr. Wm. Macewen, *in the Chair.*

A DEMONSTRATION ON THE USE OF ELECTRICITY IN MEDICINE AND SURGERY.

Dr. Workman having been requested to demonstrate the use of electricity in medical diagnosis, thought it best for this purpose to consider one instance in which its use in the diagnosis of disease could be shortly and clearly pointed out. We have such an instance in rheumatic facial paralysis. This disease shows itself in three forms—the first, or mild form, which lasts usually only two or three weeks; the second, or middle form, which is more difficult to cure, and lasts a month or two; the third, or severe form, which lasts often many months, and then is apt to leave even permanent contracture.

We are quite unable to distinguish which form a case has taken at an early date, but must wait the result, unless we are able to draw a conclusion from the electrical reactions we may find by examining the nerves and muscles with the Faradic and galvanic currents. In order to do this, we must remember that in the normal body the Faradic current, on being closed with one pole over either a muscle or the motor nerve supplying it, gives rise to a sharp, sudden contraction, which, if the current is continued, becomes tetanic. Again, the galvanic current, in the normal body, on being closed or opened with one pole on a muscle or its motor nerve, gives rise to a single sharp contraction if there be sufficient current. Not only is this the case, but the amount of current required to produce a contraction varies with the pole which is placed over the muscle, and with the action, whether closing or opening the circuit— that is, making the circuit or breaking it.

In the normal body, contraction is most easily caused by closure of the circuit with the negative pole over the nerve or muscle (negative closure contraction), while positive closure contraction requires a greater current to be used. There

are other differences, according to pole or action used, but these are sufficient for our present purpose.

If we come, then, to examine a case of facial paralysis with these currents, we find that the reaction may be quite normal to both currents—that is, on closure of the circuit, a contraction takes place on the paralysed side with as small a current as on the healthy side; while, at the same time, our patient is quite unable to bring about any motion in the muscles affected by the power of his will. We find, also, that with the galvanic current the negative closure contraction takes place with a weaker current, as shown by the galvanometer, than the positive closure contraction— that is, the reaction is the same as on the healthy side. In such a case, we may assure our patient that he is likely to recover in two or three weeks, for we have the first, or mild form, before us.

Again, we may find that both currents, on being applied over the nerve, cause a contraction in the normal fashion; but, in addition to this, on applying the galvanic current with one pole over the affected muscle, a slowly advancing contraction takes place along the muscle, and this contraction takes place with a weaker current than the normal contraction on the healthy side, and the order of the reaction is reversed—*i. e.*, positive closure contraction takes place with a weaker current than negative closure contraction—*i. e.*, the reaction of degeneration is present in its slighter phase. In this case, we have the second, or middle form, and may hope for our patient's recovery in a month or two, but must warn him that some contracture may remain for a time.

Lastly, if we examine a case ten days or more after the onset, we may find the normal sharp reaction to both Faradic and galvanic currents entirely absent when the pole is applied over the nerve, and with the Faradic current, also, when the pole is applied over the muscle; while, on the other hand, if we apply the galvanic current over the muscle, we find that a far weaker current causes a contraction than is the case on the healthy side; this contraction is quite different in character from the normal form, it is slow in coming on, gradually advances and disappears along the muscle. Its order is also different from the normal, the positive closure contraction occurs with a weaker current than the negative closure contraction. This is what is called the reaction of degeneration in its pronounced form. In such a case, we have to do with the third, or severe, form of facial paralysis, and our prognosis must be much more unfavourable. Many

months will likely elapse before recovery can take place, even with the best treatment, and the contracture, which is almost certain to result, will likely last for years, and may be permanent. He then referred shortly to the instruments shown.

Dr. MACINTYRE then read a paper on Electricity, of which the following is a synopsis :—

Introduction—1. Physical laws, including the generation of the currents. 2. A brief reference to the main facts of electro-physiology. 3. Demonstration of apparatus used in electro-therapeutics.

Definition of electricity difficult—Experiments to show (1) Generation of current ; (2) Difference of poles ; (3) Presence made manifest in the form of heat, light, and chemical action ; (4) Principle of construction of galvanoscope and galvanometer.

Two conditions in which electricity is known to us—1. Static (in a state of rest), (*a*) used in medicine for magnets ; (*b*) as Franklinism—description of machines. 2. Dynamic (in a state of motion), used in form of chemical batteries, dynamos, &c.

Comparison of flow of water and current.

Explanation of terms—

Electro-motive force = E.M.F. ⎫ Volt, Ampére, Ohm.
Current . . = C. ⎬ Units of Measurement.
Resistance . = R. ⎭ *(see Table on walls)*.

List of currents required in medicine and surgery. *See Table on wall.*

Choice of agent for producing the current, such as battery, dynamo, or thermopole.

Accessories—Collectors, rheostat, rheophores, connections, reverser, &c.

This was followed by a demonstration of instruments used in medicine and surgery for (1) Treatment of lesions of muscles and nerves ; (2) Removal of hairs ; (3) Electrolysis of nævi, stricture aneurism, &c.; (4) Motors for surgical purposes. Four Cauteries ; (5) Lighting of cavities.

Dr. Knox stated that he had used the electric cautery described by Dr. Macintyre very frequently in his practice in the Royal Infirmary. During the last four years he had removed successfully six tongues for cancerous disease by this method. In seven cases he had also employed this method of removing masses of hæmorrhoids. In two cases the os and cervix uteri were similarly removed. In one case the mastoid

process was opened up by the electric drill. Dr. Knox could corroborate Dr. Macintyre's statement as to the absence of hæmorrhage in these operations, and the ease and speed with which they were performed. He also found that after removing hæmorrhoids in this way there was no unusual contraction of the cicatrix such as frequently followed the use of the actual cautery. After considerable experience of other methods the electric cautery seemed to him to be the simplest and best means of removing hæmorrhoids and excising the tongue.

Dr. Robertson referred to cases of mitral disease and catalepsy already published, in which, so far as he could judge, recovery took place under the use of continuous currents passed either directly through the brain, or from the neck through the head along the course of the sympathetic nerve. He had chiefly used a Stöhrer's battery in the treatment of these cases.

GLASGOW SOUTHERN MEDICAL SOCIETY.

Session 1889-90.

Meeting X.—27th February, 1890.

The President, Robert Pollok, M.B., *in the Chair.*

THE SURGICAL TREATMENT OF MALIGNANT DISEASE OF THE UTERUS.

By Dr. J. S. Nairne.

Dr. J. S. Nairne read a paper on "The Surgical Treatment of Malignant Disease of the Uterus by Abdominal Section, Kolpo-Hysterectomy, and Excavation."

Dr. M'Millan congratulated Dr. Nairne on his good results.

Dr. Duncan said he had listened with very great pleasure to Dr. Nairne's paper. There was no doubt that any man that could invent such a series of instruments as Dr. Nairne had shown was a very great public benefactor. An operation something like this had been done by a Glasgow surgeon three or four years ago, but not so extensive as the operation Dr. Nairne has described. He had no doubt that a great many cases of epithelial cancer might be cured if taken early enough, as is seen in the lip. He had a case which lived fifteen years, and another twelve years after an operation on

the lip, and he thought such a result might be obtained in epithelioma of the uterus. Even in scirrhus cancer he believed if the case is taken early enough there is hope of good results. Curiously enough, the last case he saw before coming to this meeting was a cancer of the uterus, but unfortunately it was too far advanced for operation.

Dr. Gilmour was inclined to take a more cautious and critical view of this paper. To begin with, it was not so fully detailed as he would like. His difficulty was one of diagnosis, through Dr. Nairne not admitting microscopic evidence. He had cases where removal of the uterus for cancer was advised, and yet the patients are still alive and have borne children. As regards the operation itself, he thought it a tinkering operation; nothing short of total removal being of any service. From what he had heard he certainly would not advise a patient to submit to excavation.

Dr. Dewar agreed with Dr. Gilmour that more information was required as to the results of Dr. Nairne's treatment. He would also enter his protest against Dr. Nairne's rejection of the microscope as a means of diagnosis.

Dr. J. K. Kelly thought that Dr. Nairne condemned vaginal hysterectomy too readily. Evidently he had not seen the results of the German operation. The statistics up to two years ago shows a record of 6 per cent, as compared with the record that Dr. Nairne gives of 40 per cent. It was also absolutely necessary before undertaking an operation for cancer that the disease be proved to be cancer. The symptoms as given by Dr. Nairne do not at all prove them to be cancer; indeed, you might have all these symptoms present and yet cancer not exist. He did not believe any operation would be correct which did not remove the whole uterus, and not a portion of it.

Dr. Dougall thought the paper from its practical nature very interesting. In treating of the etiology of the disease, old age had been omitted. It was said that cancer prevailed in the healthiest localities, because in such places people were long-lived. He was a little surprised to hear Dr. Nairne deprecating the microscope as a means of diagnosis in cancer. He had seen a deal of cases of uterine scirrhus at the Royal Infirmary Dispensary, the diagnosis of which was perfectly easy; indeed, in most of these instances one could smell the disease. He thought the first symptom was pain, then indura-tion, ulceration, and hæmorrhage followed; although it was likely that induration preceded the pain, and was the cause of it. He did not like the word "excavation" as used by Dr.

Nairne; it was suggestive of dynamite and the crowbar. If a woman was told that she was going to be excavated, she would very likely say, "Better by far to bear all the ills I have." The word "hysterectomy" or "hysterotomy" would be better; at least the patient would not likely know their meaning, as she would do that of "excavation." Besides, a similar word to hysterotomy was already in use for a similar operation in "craniotomy." Any hope of success of Dr. Nairne's operation in scirrhus uteri would depend on the operation being done at the very earliest stage of the disease, and it was seldom that patients were seen at this stage.

Dr. John Brown thought it a pity that Dr. Nairne had not at least corroborated his diagnosis by a microscopic examina- tion of the material excavated. Further, he thought that Dr. Nairne had not communicated to the Society sufficient infor- mation to enable the members to come to any conclusion as to the value of the operation he describes. No information has been given as to the length of time the patients lived after the operation. In all there has been 36 recoveries out of 42 cases. Presumably this means recoveries from the operation, but we require to know how many recovered from the disease, if any; if none, how long they lived after the operation.

Dr. James Hamilton did not think the use of the micro- scope was at all necessary in the diagnosis of uterine cancer, especially in the later stages, when you have hæmorrhage, fœtid odour, and pain. He would like to have more informa- tion as to the results of this operation before recommending such a serious operation.

Dr. Pollok said it behoved gentlemen who brought such subjects before us, and who had such valuable material under observation, to be most accurate both in their diagnosis and statistics, because the question as to the value of the operation is still *sub judici.* His experience of operating in these cases was not very favourable; those cases that were not operated upon lived as long as those cases that were. The length of time the patients lived after the operation was a most impor- tant item.

Dr. Nairne replied. He did not say that the microscope was of no use; he thought it was of great use after the event. The microscope invariably confirmed the diagnosis given beforehand. The death-rate after hysterectomy was at least 20 per cent, after abdominal section 60 per cent to 90 per cent, so that excavation was much more favourable in results than either of these. The benefit to the patient is relief of pain and freedom from odour.

ABSTRACTS FROM CURRENT MEDICAL LITERATURE.

MEDICINE AND PATHOLOGY.

By R. STEVENSON THOMSON, B.Sc., M.B., C.M.

The Diphtheritic Poison and its Action upon the Kidneys. —During an epidemic of diphtheria, Dr. Sprouck instituted a series of investigations, which have led him to the following conclusions :—(1.) In every examination, the bacillus of Klebs was found in the pseudo-membrane, pure cultures of which showed very active poisonous properties. (2.) This bacillus remains localised in the membranes ; but when inoculated under the skin, it spreads through the subcutaneous tissue up to a certain point, yet it never enters the blood or the internal organs. (3.) A fatal dose, when divided into several injections, and given at intervals in the course of 24 hours, will produce only the typical paralysis, from which recovery takes place. (4.) Subcutaneous or intravenous injections produce a real acute nephritis with albuminuria (rabbits). After death the kidneys are usually found swollen. (5.) This albuminuria furnishes fresh evidence in favour of the theory that the bacillus of Klebs is the actual exciting cause of diphtheria.— (*Deutsche Med. Zeit.*, November, 1889.)

Pathogenic Characteristics of the Microbes found in Malignant Neoplasms.—M. Verneuil has formulated the following conclusions on the basis of his investigations :—

1. The tissue of malignant neoplasms—*e. g.*, cancer, sarcoma, and epithelioma, is the seat of various microbes, but the number and species of these he has not yet succeeded in determining satisfactorily.

2. This invasion, the occurrence and causes of which are equally obscure, may remain latent, but in certain cases may cause important modifications in the development and nutritive processes taking place in tumours, such as rapid growth, softening, and ulceration.

3. The microbes do not occur in all kinds of new formations, nor yet in all tumours of one and the same kind, and they are not equally distributed throughout every part of the infected tumours. They are not found in the early stages of lipoma, pure fibroma, cancer, nor sarcomas, when these tumours are indolent, of slow growth, and covered with unbroken epithelium. On the other hand, they are found almost constantly in all neoplasms of rapid growth which are ulcerated and softened.

4. These microbes, besides their property of producing inflammatory changes, have often pathogenic characteristics which have an influence upon the general health. They are, in all probability, responsible for a greater or less degree of fever, or fever of an irregular character, especially when enclosed within a tumour growing rapidly and tending to undergo softening. Without doubt, they play an important part in the production of cachexia.

5. Yet more, when they become diffused through a wound, during the removal of a tumour, they may produce a fatal septicæmia.

6. The knowledge of these facts speaks, not so much for early removal of such growths, as for the necessity which devolves on the operator for taking every necessary precaution during the removal of infected tumours. - -(*Deutsche Med. Zeit.*, 25th November, 1889.)

Affections of the Kidneys in Leprosy and their Relations to the Pathological Lesions in the Skin. By Beavan Rake

(*Monatsch f. prakt. Dermat.*, 12th August, 1889).—During the last five years this observer has performed 78 autopsies on leprous subjects in the hospital at Trinidad. In 23 cases, or 29·4 per cent, inflammatory disease of the kidneys was found, assuming one or other of the usual forms (acute nephritis, large white kidney, mixed form, and contracted kidney). In 12 cases the leprosy assumed the tubercular, in 9 cases the anæsthetic, and in 2 cases the mixed variety. That the specific bacilli have a probable direct influence on the production of these kidney changes, the writer does not believe to be certain, because in the kidneys of 49 cases of leprosy which he examined microscopically, in only 2 cases were the organisms found without any distinct signs of inflammation being associated with them. On the other hand, he believes that a connection exists with the disease in the skin, and that this is the more likely cause of the frequent kidney changes, and this belief is founded on the fact that kidney disease is associated by preference with those cases which run a markedly chronic course, and it is under such circumstances the extensive destruction of sweat glands throws an increased amount of work upon the kidneys.

Addison's Disease in a Nine Months' Old Child.—In the *Deutsche Medizinal Zeitung* for October, 1889, p. 992, there is a short account of the above case reported by Hr. Dierbach. The child came of a family which in several other members showed very decided tubercular taint, and one brother, older than the patient, died at the age of nine months from tubercular meningitis. From the age of three months the child showed a gradually increasing pigmentation of the skin, especially of those parts left uncovered by the clothing. This pigmentation was accompanied by digestive disorders and gradually increasing weakness. After a while the brown colouration of the skin became so marked that it attracted the attention of the parents, who were led to show it to other people. The scalp showed a large nævus, and on the breast and mucous membrane of the lips and mouth a number of much darker pigment spots made their appearance. The child died in July, 1889, from coma following upon gradually increasing asthenia. There was no *post-mortem* examination. There seems little doubt but that this was a case of Addison's disease, though no case of this disease has yet been reported under the age of ten years.

The Microbe of Tetanus.—In a contribution to the *Wienn. Med. Presse*, Fizzoni and Cattani declare they have succeeded in obtaining pure cultures of this bacillus originally observed by Nicolaier-Rosenbach. The cultures were obtained from a patient suffering from tetanus, whose arm had been amputated for compound fracture. No cultures could be got from the blood though this was repeatedly attempted. Matter from the surface of the wound gave three organisms from which the bristle-bacillus was separated out in pure cultures.

Kitasato's method of obtaining pure cultures consists in exposing the culture to a temperature of 80° C., whereby all organisms are destroyed except the spores of the tetanus bacillus. Inoculations of mice, &c., produce tetanus, and re-inoculations do not seem to diminish the virulence of the microbe.

Two Fatal Cases of Biliary Cirrhosis (Congenital Pernicious Icterus) in the Same Family.—The following notes are on the *post-mortem* examination of two cases of the above disease, contributed by Dr. Hatfield to the *Transactions of the American Pediatric Society*, and reported in the *Archives of Pediatrics* of January, 1890 :—

" *Gross Appearance of the Liver.*—5 × 2¾ × 1¾ inches, dark blackish-brown, surface uniform in colour, capsule unchanged ; firmness under palpation normal ; cut surface, same colour as serous surface, with an added superficial tinge of greenish-yellow, flecked with very minute whitish specks and streaks, which suggest possible cirrhosis ; not much blood in branches of vena cava,

their surface greenish-yellow, but not stained ; cut surface quite moist and apparently somewhat softened.

" *Spleen.*—Small petechial spots scattered through the organ. Fragment only furnished. Apparently much enlarged ; dark-red in appearance, very soft ; cut surface deep red colour, soft, moist ; Malpighian bodies hardly distinguishable, trabeculæ not distinguishable.

" *Lung.*—Only small pieces furnished, greenish-yellow tinge over all ; areas of red blotches ; vessels not visible ; blood seems partially to be washed out ; floats, but not freely ; consolidation not certain ; firm and elastic to touch.

" *Pancreas.*—Organ somewhat firmer than normal on palpation ; same greenish-yellow tinge over and throughout the organ.

" *Microscopical Appearances of Liver.*—1. There is a large number of cir- cumscribed, circular, and ovoid, occasionally branching, islands of connective tissue, which surround the gall-ducts. Occasional aggregations of leucocytes lie in the periphery of the lobules, but in no case surround them.

" 2. The capillaries are apparently thicker than normal, and in large areas of the tissue are irregular in size, contour, and distribution ; they contain a few leucocytes.

" 3. In many places the amount of connective tissue, which represents the reflections of the capsule of Glisson, is largely in excess of normal.

" 4. Scattered over the sections in much the same general manner as the islands of leucocytes are distributed in chronic syphilitic hepatitis, there are clumps of small, round, solid nuclei, whose arrangement is that of those sur- rounding a gall-duct in some cases, and in others so strongly suggests the same arrangement that there can be little doubt that they are such.

" 5. The petechial spots, mentioned in the description of the gross appear- ances, cannot be seen in the stained and cleared section.

" 6. The capsule is moderately thickened.

" 7. The greenish-yellow stain, mentioned in the description of the micro- scopic appearance, is due to (*a*) a granular pigment, which is distributed irregularly in the lobules, but which, taken in relatively large areas, is consider- ably more abundant in some parts of the sections than in others ; (*b*) a greenish- yellow stain, which lenses of a power of 325 diameters, does not resolve into granular matter.

" 8. The central veins of the lobules cannot be clearly made out.

" *Lung Tissue.*—1. There is a small number of areas in which the alveoli are filled with epithelial cells and leucocytes. These areas vary in size, but are small.

" 2. The connective tissue which surrounds the arteries is most cross- sections increased in amount, and in some markedly so.

" 3. Throughout the sections there are areas of hæmorrhagic extravasation. Some of these are quite large, and are evidently the petechial spots mentioned in the description of the gross appearances of the tissue.

" 4. The pleura is apparently thickened, and there are long, slender pro- cesses of connective tissue which extend from it down into the tissue of the lung."

Contagiousness of Phthisis.—The report of the committee appointed last year was made by Dr. William Porter, of St. Louis, Mo. He thought that the word portageous was more accurate than contagious. He thinks the evidences of transmissibility in tuberculosis are conclusive. The New York Board of Health has passed resolutions which acknowledge this contagion. The fact has been published that there have been no cases of tuberculosis among the nurses and house physicians in Brompton Hospital. This is due on account of the excellent hygiene of that institution, and does not prove the non-contagiousness of the disease. It has been said that there was no tuber- culosis among the North American Indians, and but little among the early settlers of New England. One hundred years ago the climate of New York was thought good for tuberculosis by Europeans, who sent their patients there ; then later, the prairies of Illinois were lauded for the same purpose ; later still,

the mountains of Colorado and the valleys of California. He emphasised the fact that the care of localities used as resorts by consumptives is very import- ant, so that they may not get infected by the disease. He recommended that consumptive patients use cuspidors, in which there is a 1 to 1,000 solution of bichloride, as it has been demonstrated that a weaker solution has not always the power to destroy the bacillus. As a prophylactic measure to the spread of tuberculosis, the most careful inspection of meat and milk was recom- mended.—(*Canada Lancet*, December, 1889.)

The Artificial Feeding of Infants. By Dr. Meigs, Philadelphia.— In a paper read before the American Pediatric Society, Dr. Meigs gives a modification of his well known diluted cow's milk employed in infant feeding. As the cream he recommends to be added is apt to turn sour by too long keeping, he now directs that a quart of good milk be placed in a deep jar and allowed to stand in a cool place for three hours; from this one pint is then slowly poured off, care being taken not to agitate the vessel. When the child is to be fed there are taken of this weak cream three tablespoonfuls, of lime water two tablespoonfuls, and of sugar water three tablespoonfuls. The sugar water is made by dissolving 18 drachms of sugar of milk in a pint of water.—(*Archives of Pediatrics*, December, 1889.)

Recent Improvements in Infant Feeding.—Dr. J. Lewis Smith, in a paper published in the *Archives of Pediatrics* for December, 1889, con- siders that in addition to milk the flour of one of the cereals should form part of the ordinary diet. This should be flour which has been exposed, in a dry state, for days to the heat of boiling water, which converts a considerable pro- portion of the starch into dextrine; and, if part is not so converted, it seems to be so changed that it is easily digested, not overtaxing the digestive power of infants under three months.

The following are the directions given for the preparation of this food :— Add a heaped tablespoonful of the flour to eighteen parts of cold water which has been boiled. The gruel may be brought to the simmering point to facilitate the mixture. For infants over six months, in ordinary health, six tablespoon- fuls of sterilised milk (by keeping at a temperature of 180° to 190° F. for two hours in a steamer) and six of the gruel may be mixed for one feeding. Salt should be added till it can be tasted.

The Value of Change.—A girl out West accidentally swallowed a trade dollar a few months ago. Her life was at first despaired of; but after some six weeks' treatment, and the use of a powerful specific for trade dollars, a number of red sores broke out all over her body; and, when these were opened, a copper cent was found in each. At the last report eighty-four cents had been recovered in this manner, and her physician was hopeful of recover- ing the whole amount swallowed, perhaps with interest.—(*The Medical and Surgical Reporter.*)

DISEASES OF THE SKIN.

By Dr. A. NAPIER.

Acute Circumscribed Œdema with Hæmoglobinuria.—At the Dermatological Congress, held at Prague, Dr. Joseph referred to a case of circumscribed œdema, associated with hæmoglobinuria. The patient was a boy of five, who, two years and a half ago, suffered from acute circumscribed œdema, involving the skin of the exposed parts, such as the face and hands. The swelling constantly returned if he were exposed to cold or windy weather, but soon disappeared on returning to the house. He is still subject to it on the slightest exposure to cold; the ears become quite frozen, while the lungs are

constantly troubled with catarrh. Last winter paroxysmal hæmoglobinuria was added to his other symptoms ; after an attack of shivering from cold feet, the urine became loaded with hæmoglobin, which was tested chemically and microscopically. Dr. Joseph also mentioned the case of a man of 38, who, for four years has been subject to recurring attacks of acute œdematous swelling of the skin. The cause in this case seems to be alcohol, as when the patient gives up drink the œdema disappears, only to reappear whenever he returns to his potations. [In this connection, see *Glasgow Medical Journal* for April, 1889, p. 310.]—(*Practitioner*, November, 1889.)

Poisoning by Subcutaneous Injection of Oleum Cinereum. —This case, which occurred in Kaposi's Dermatological Klinik, is recorded by Dr. W. Lukasiewicz, in the *Wiener Klin. Wochenschr.*, No. 29, 1889 The patient, a well-nourished woman of 46, who suffered from a maculo-papular syphilide, was treated with subcutaneous injections of oleum cinereum (the " gray oil " which has lately been largely used on the Continent for this pur- pose, having the composition mercury, 3 grammes ; lanolin, 3 grammes ; ol. olivar., 4 grammes), 2·15 ccm. in all of the oil having been injected in the course of seven weeks' treatment. One week after the last injection severe stomatitis mercurialis set in, followed by copious bloody diarrhœa, with much pain and tenesmus, and the patient died. At the *post-mortem* examination the mucous membrane of the lowest part of the ileum and of the entire colon was found to be swollen ; the crest of each fold was covered with grayish- yellow sloughs, between which the tissues were grayish-brown in colour ; in the kidneys were found cloudy swelling of the epithelium of the convoluted tubules, with occasional necrosis of the same, cellular infiltration of the inter- stitial connective tissue, with small chalky deposits, mostly in the convoluted tubules of the cortex. Several of the parts into which injection had been made were excised ; these were totally or partly necrosed, often contained globules of mercury, and presented three layers, one of granulation tissue, the second of large, closely packed cells, the last of connective tissue. On chemical examination of the part into which the last injection had been made, six weeks before death, 69·5 per cent of the mercury injected was recovered, a fact which showed how slow was the process of absorption, and how illusory is any exact dosage by this method. The author also mentions some other cases in which, several weeks after the last injection, severe stomatitis occurred. Since the occurrence of this unfortunate case, no more than 5 to 6 similar injections have been given to patients in Kaposi's Klinik, at intervals of at least a week, and at most 0·15 ccm. of the oil being used at one time ; untoward results have not so far been observed.—(*Cbl. f. d. Med. Wiss.*, No. 40, 1889.)

Bacteriological Investigations in Pemphigus Neonatorum. —Strelitz, in *Arch. f. Kinderheilk.*, xi, p. 7, took the contents of some pem- phigus bullæ from the skin of a girl of three months, and examining the fluid by Koch's method, found in it two varieties of cocci alike in size—0·5 to 1·3 cc. in diameter, the one golden yellow, the other milky white. The author regards the yellow culture as probably identical with Demme's diplococcus, which the latter authority considers specific. Strelitz, however, judging from his own, and also from Demme's infection experiments, thinks it still unproved that any microbe which has up till the present time been discovered can be looked upon as the cause of pemphigus.—(*Cbl. f. d. Med. Wiss.*, No. 45, 1889.)

Does the Human Skin Contain Lanolin ?—Dr. A. Santi denies that Liebermann's tests for cholestol and cholesterin are available also for the determination of cholesterin fats, that is to say, for lanolin, and contends that Liebreich was in error in relying on these tests for the detection of such fats. Santi's own investigations and tests (given in full detail in the original) enabling him to distinguish between cholesterin and lanolin, these methods were followed in examining extracts obtained from human epidermis, cutis vera, and subcutaneous fatty tissue, with the result that while cholesterin was dis-

covered in abundance no trace was found of lanolin. This is quite opposed to Liebreich's views.—(*Monatshefte f. Prakt. Dermatol.*, ix, 1889, No. 4.)

Trichofolliculitis Bacterica.—Dr. P. Michelson records the case of a young lady who suffered from alopecia, some of whose hairs showed, near the root end, peculiar soft whitish nodules, which were easily broken down under the finger. These masses were seen on section to consist of an abnormal development of the epithelial lining of the hair follicle, which, throughout its whole thickness, but especially near the end of the hair-shaft, was permeated by numbers of bacteria. Whether the presence of these, or the cornification of the root sheath, was the primary pathological condition was not clear. Sulphur applications improved the state of the scalp, but neither these nor subsequent parasiticide remedies had any effect on the alopecia.—(*Deutsche Med. Wochenschift*, No. 29, 1889.)

Adenoma Sebaceum.—Under this name there is described by Dr. J. J. Pringle, in the *Brit. Journal of Dermatology* for January, 1890, an affection of which he has himself recorded one case, while five cases are gathered from medical literature. On review of the whole subject Dr. Pringle presents the following conclusions :—

" 1. A number of cases may be grouped together under the name of Adenoma Sebaceum, first proposed for them by Dr. Balzer.

" 2. In all the essential element is an hypertrophy of sebaceous glands.

" 3. The seat of election of the disease is the face, and especially those parts of it where the sebaceous glands are normally present in greatest abundance.

" 4. The condition is always either congenital or observed in early life.

" 5. It is frequently aggravated at the commencement of puberty, or the patient's attention to it may be aroused at that age when ' le désir de plaire ' is naturally nascent in the mind.

" 6. It may be associated with other sebaceous disorders prone to develop at that period, but such association is by no means constant or essential.

" 7. There is always a certain amount of concomitant vascular hypertrophy or telangiectasis, but the amount present varies within very wide limits, being in certain cases so inconspicuous as to attract no attention, whilst in others it constitutes the main feature of the disease.

" 8. Telangiectases often co-exist in regions other than those affected by the sebaceous changes, and to this clinical type the additional epithet ' telangiectatic ' may reasonably be applied.

" 9. Other degenerative or ' nævoid ' conditions of skin are often also present (warts, true nævi, molluscum fibrosum, pigment changes, &c.), the association being so frequent as to suggest their possible dependence upon a common cause.

" 10. The subjects of the disease appear to be generally intellectually below par ; all those cases hitherto observed have been in members of the lower orders.

" 11. Apparently females are more frequently affected than males.

" 12. The disease is absolutely benign, and unattended by subjective symptoms, unless complicated by other affections.

" 13. Its tendency is to increase up to, and remain stationary after, puberty ; or to disappear slowly, leaving shallow, atrophic scars which ultimately fill up.

" 14. It can be removed by operative procedures, but may afterwards recur *in loco.*"

The Microbe of Erysipelas.—Professor Leroy has published in *Comptes Rendus de la Soc. de Biologie*, 6th December, 1889, some interesting observations on the cultivation of the *streptococcus erysipelatis*, from which it appears that this fungus, after growing and developing in gelatine, may disappear and remain inert for a time (over a year in these experiments), may resuscitate itself, again grow actively, and become capable of inoculating fresh gelatine cultivations, and exciting true erysipelatous inflammation in the ear

of the rabbit. Professor Leroy thinks that this property accounts for recurrent and periodic erysipelas.

Pigmentation, Supra-renal Disease, and General Tuberculosis. St. Petersburg Inaugural Dissertation (1889), by Dr. Koltypin.— We have here the results of examination of the skin and supra-renal capsules in thirty-two cases of generalised tuberculosis. The frequency of supra-renal disease in general tuberculosis is noted ; in none of the thirty-two cases were these bodies normal, and the nature and frequency of the morbid changes, arranged in descending order, were *vascular lesions, infiltration with lymphoid (granulation) cells, fatty degeneration, amyloid degeneration.* There seemed to be no strict proportion between the intensity of the supra-renal disease and the tubercular process. In a large majority of cases of tuberculosis the skin shows an abnormal pigmentation—*e. g.*, in twenty-five out of these thirty-two cases. This cutaneous affection seems to be identical with the so-called *chloasma cachecticorum.* The pigment is always deposited in the lower layer of the Malpighian stratum, but in severe cases occupies several layers of the productive stratum, and may even infiltrate the connective tissue of the papillary layer. The intensity of the pigmentation is not proportionate to that of the general tuberculosis, but appears rather to stand in connection with the variety and intensity of the supra-renal disease.—*(Brit. Jour. of Dermat.*, Jan., 1890.)

On Epidemic Shingles. Professor Kaposi, Vienna (*Wiener. Med. Wochschr.*, 25 and 26.)—At the meeting of the dermatologists at Prague, Professor Kaposi expressed his opinion that herpes zoster is a malady of infectious origin. He founds this theory on facts. (1) That it generally occurs in small epidemics ; (2) that these epidemics regularly recur in spring and autumn ; (3) that it is very unusual for a person to be twice affected with the disease ; and (4) that the various epidemics exhibit various types, one presenting only light cases, while another will be characterised by an almost uninterrupted series of severe ones. The last epidemic of shingles observed by Kaposi occurred in November, 1888, lasting till February, 1889, and consisted quite uniformly of mild attacks, numbering some forty cases, of which some were quite abortive, while others, although of an eminently benign nature, showed perfectly pronounced symptoms. Weigert's theory of herpes being due to a local irritation acting through the medium of a fissure in the integument is to be unreservedly rejected ; for, as Kaposi points out, in the commencement the skin is always perfectly intact, and we must consider the affection as due to a disturbance of the central nervous system, perhaps the spinal ganglia or spinal cord, for which an analogy is found in the cases of herpes due to poisoning with carbon monoxide.

Hydronaphthol in Ringworm.—In an article in the *Lancet*, 30th November, 1889, on page 1,111, Dr. Morgan Dockrell gives the following as his treatment of tinea tonsurans :—Have the head completely shaved, leaving the usual fringe all round ; then wash with a 5 per cent soap of hydronaphthol, using water as hot as can be borne. After drying the scalp, apply over the affected area a 10 per cent plaster of hydronaphthol in narrow strips, letting each strip overlap its fellow, taking care that the plaster extends quite half an inch beyond the margin of the diseased patch. Outside the margin of the plaster paint a layer of a 10 per cent hydronaphthol jelly (when melted) so as to exclude all air. At the end of four days he removes the plaster, and the diseased stumps are found adhering to it. He repeats the previous process, applying for one week a 20 per cent plaster. Again the process in repeated, this time applying a 10 per cent plaster for 10 days, when, on removal, the disease will be found to be cured. Care should be taken that all articles brought in contact with the head before treatment be destroyed, otherwise reinfection will take place, and the treatment brought into discredit. He says that the above treatment has been very successful in his hands.

DISEASES OF THE THROAT.

By JOHN MACINTYRE, M.B.

Malignant Disease of the Larynx.—Professor Chiene, of Edinburgh, successfully performed the operation of complete laryngectomy last year in a case of malignant disease, and Dr. Hunter Mackenzie, in a communication to the *Edinburgh Medical Journal* for November, 1889, makes some interesting observations thereon. The case was first seen by Dr. Mackenzie in 1887. By means of the laryngeal forceps he removed a nodular thickening which sprang from the anterior third of the right vocal cord, and a sessile fleshy looking mass springing from the posterior third of the same cord, and projecting into the glottis. After removal the diagnosis of epithelioma was confirmed by microscopic examination. Partial laryngectomy was recommended, but, acting upon the advice of two other surgeons, the patient refused to have this done. Recurrence took place early in the spring of last year, and the removal of the whole larynx became necessary. Dr. Mackenzie holds that partial laryngectomy would have been sufficient had the operation been performed when he advised it, because the growth was intra-laryngeal, and for eight months afterwards it was strictly limited to the one side. Dr. Mackenzie now considers one clinical feature of great value in diagnosis—viz., the mobility of the cord was slightly impaired. He adds, " in its early stages, and in its manner of development, this paresis presents such characters as distinguish it from all other forms of laryngeal paralysis, but the appearances are at first so very slight as to be capable of detection by experienced observers only."—(*Edin. Med. Journal*, November, 1889.)

Phthisis Laryngea.—The possibility of primary laryngeal tuberculosis has been prominently brought forward at intervals for a long time. During the past year many investigators have again studied this important question, and it is quite impossible here to mention even the names of those who have contributed to the work. It is worthy of notice, however, that the view of its non-existence is being strongly questioned by many distinguished observers, amongst others Schröetter, Voltolini. and Heinze. The view that, although rare, primary tuberculosis does exist in the larynx is certainly becoming more prevalent, and three cases are recorded of late where undoubted tuberculosis was found in the larynx, and the most complete examination of the lungs is said to have failed to detect it there.—(Sedziak, *Journal of Laryng.*, June, 1889.)

The second important question raised in this connection—viz., Is laryngeal phthisis curable even in a percentage of cases ? is being answered in the affirmative by many. Two cases of spontaneous cure by cicatrisation are reported: one by Dr. Sajous at the American Laryngological Association, and the other by Dr. Hering, of Warsaw. Many new agents have been brought forward, and some of the old ones have been further tested by independent observers. Menthol has been used continuously by Rosenberg since 1885, and seems to hold its own. The use of lactic acid, as recommended by Hering, and afterwards by Krause, is advised by many, although the results are variable. (For description of these methods see former abstracts in this *Journal*.)

Creolin brushed daily in $\frac{1}{2}$ to 2 per cent solution, freshly prepared each time, is favourably reported upon by Sedziak. The galvano-cautery is being used by a number. (See *Phtisie Laryngée*, par MM. Gonguenheim et Tissier ; Masson, Paris.)

Surgical treatment often aids us. Endo-laryngeal incision (Schmidt) or scarification (Hering), and the subsequent application of lactic acid favours recovery. The early performance of tracheotomy is becoming more prevalent. ('' Aphorismes sur le Diagnostic et le Traitement de la Tuberculose du Larynx." Par le Professeur Schnitzler. '' La Pratique de la Trachéotomie chez les Phthisiques, indicationes et contra-indicationes," Dr. Koch, Luxembourg.—

Transactions of the International Congress of Otology and Laryngology, held at Paris, September, 1889.)

Rumbold's Method of Treatment of Nasal Catarrh.—In the paper mentioned below, Dr. Maclellan, U.S. Army, brings forward this method of treatment of catarrh of the upper air passages. The treatment is based upon the therapeutic benefits of vaseline when applied to inflamed sur-faces, and Dr. Rumbold devised a number of spray points on which a small cup is placed, so that a drachm of this agent can be heated to the point of liquefaction, and then sprayed into every part of the oro-nasal cavities. Three agents are prepared as follows in addition :—Take a wide-mouth glass stop-pered bottle, place it in 2 oz. of vaseline, and 10 minims of eucalyptol and mix cold. To mix, first use a glass rod and then a small spoon. Continue this process until the eucalyptol is intimately incorporated with the vaseline. In a second bottle, containing the same amount of vaseline, add 10 minims of the oil of gaultheria, and mix as in the first instance. In a graduated measure place 1 oz. of glycerine, on it drop 30 minims of the fl. extract of pinus Cana-densis, and then add slowly 3 oz. of boiling water, and mix. When cold, place in a bottle similar to those first used. One grain of the eucalyptol pre-paration is added to the heated vaseline when spraying the naso-pharynx and the anterior and posterior nares. The same quantity of the eucalyptol and gaultheria preparations are added when spraying the back of mouth and throat. The applications should be made at intervals of twelve to twenty-four hours, until the symptoms are relieved, and every second or third day for a time afterwards.

On the Central Motor Innervation of the Larynx.—Dr. Felix Semon and Mr. Victor Horsley have made a preliminary communication on this subject, stating that their results have been obtained after performing over a hundred experiments on monkeys, dogs, cats, and rabbits. They con-clude—(1) There is in each cerebral hemisphere an area of bilateral representa-tion of the adductor movements of the vocal cords, situated in the monkey just posterior to the lower end of the præcentral sulcus at the base of the third frontal convolution, and in the carnivora in the præcrucial and neighbouring gyrus. (2) They have been unable to find an area of representation in the cortex of the abductor movement of the vocal cord. (3) If one of the cortical areas for adduction be so completely excised that stimulation of the neighbour-hood of the lesion produces no effect upon the larynx, and if the wound be allowed to heal aseptically no paralysis of the cords is observed. Further, if subsequently the corresponding area in the opposite hemisphere be excited just as completely bilateral an adduction of the cords is produced as if the opposite area were intact. (4) Long continued or powerful excitation of the laryngeal area produces true epilepsy of the vocal cords, gradually spreading to the muscles of the face, head, neck, and upper limbs. (5) Direct excitation of the accessory nucleus in the medulla evokes abduction of the cords and never anything else.

In connection with this subject, Professor Krause, whose name is not men-tioned in the above paper, writes to the *British Medical Journal* claiming that the points observed were published as early as 1883. The authors of the paper reply, stating that " investigation " is not identical with " discovery ; " that while they have corroborated by far the greater part of Professor Krause's work, they do not know of any work of his on the medulla ; that they differ in one important point about cortical stimulation, and that in their complete paper it is their intention to do every justice to Professor Krause.—(*British Medical Journals,* 21st December, 1889, 18th January, and 25th January, 1890.)

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ORIGINAL ARTICLES.

CLINICAL LECTURE UPON COUGH AND DISTURB-ANCE OF RESPIRATION, AS INDICATIONS OF DISEASE OF THE UPPER AIR PASSAGES, WITH A FEW ILLUSTRATIVE CASES.*

By DAVID NEWMAN, M.D.,

Surgeon to the Department for Diseases of the Throat, and Lecturer on
Laryngology at the Royal Infirmary, and Surgeon to the Out-door
Department, Western Infirmary, Glasgow.

GENTLEMEN,—It has been my custom for some years to devote one or two lectures at the beginning of the course to the consideration of the general symptomatology of diseases affecting the upper air passages. It is convenient to study the general indications which form the symptoms of disease before entering upon a more minute description of special lesions. In doing so, the less important phenomena are elimin-ated, and your attention is concentrated for the time being upon the more important facts. A patient seeks advice because of some interference with function, or because of some morbid sensation, which he rightly or wrongly attributes to a throat affection. In many instances he is correct, but in a few the impairment of function is due not to any disease in the throat, but to some morbid change in other parts.

The general practitioner is consequently bound to consider the symptoms before even the idea of making a physical examination suggests itself. In this clinique, where all the

* Delivered at the Royal Infirmary, during the Winter Session, 1889.

cases have been previously selected and classified, a laryngo-scopic or rhinoscopic examination is made as a matter of course. In general practice, on the other hand, you will but occasionally meet with such cases as are here presented to you, and it is only after you have formed an opinion from the *symptoms* that you seek to verify your diagnosis by a careful observation of *physical signs*.

According to the situation of the lesion, as well as a con-sequence of its nature, the phenomena which we call symptoms vary in individual cases. Hence, from the subjective evidence of the disease, it is impossible to form a reliable diagnosis, either in regard to the situation or the precise nature of the morbid process. This fact is well illustrated in two cases, which will be brought before you this session. They are both examples of carcinoma in the larynx.

The first case, that of J. M., aged 59, was admitted to the ward complaining of slight hoarseness, occasional dyspnœa, and pain over the larynx. On inquiring into the history of the case, it was found that he had not observed anything wrong with his throat till the middle of September, 1889, a month previous to admission, when he became conscious of the presence of "a lump," which he said "prevented him from breathing freely," and also required him to exert himself in order to speak clearly; he also suffered from great difficulty in swallowing. On laryngoscopic examination a large diffuse, smooth, red swelling, was found to occupy the upper part of the larynx, and to involve the base of the epiglottis, the left arytenoid cartilage, and the aryteno-epiglottidean fold. The mucous membrane was swollen and œdematous, and the swelling extended so far to the right side that it was difficult to understand how the patient got a sufficient supply of air, and, of course, precluded the possibility of an examination of the lower part of the larynx. The lymphatic glands on the left side of the neck were much enlarged, hard, and nodulated.*

In the case which I have just described, even although the structural changes in the larynx are extreme, yet on account of the situation of the lesion in the upper portion of the larynx, the voice is not much interfered with, and the patient seldom complains of cough or marked dyspnœa, even although the tumour is of considerable size. On the other hand, in the case I am about to describe, that of J. A., aged 64, the history and symptoms are very different. The tumour was situated low down in the cavity of the larynx.

* The patient died from laryngeal carcinoma early in January, 1890.

For six months previous to admission the patient suffered from constant and increasing hoarseness, accompanied occasionally by severe attacks of coughing, but little or no pain or difficulty in swallowing. Four months ago he was attended by Dr. Fullerton, who found a small growth on the left side of the larynx, and on removing a small portion for microscopic examination, it was discovered to be an epithelioma. Dr. Fullerton then recommended him to come into the Royal Infirmary for the purpose of having a radical operation performed. On laryngoscopic examination you will see, on the left side of the larynx, close to the anterior commissure, and springing from the base of the epiglottis and anterior part of the false cord, a small tumour about the size of a large green pea. The growth is partly covered with mucous membrane, but the most prominent portion is ulcerated. The ulcerated surface is irregular, and there is some hyperæmia of the mucous membrane in the neighbourhood. This, however, is only slight, and there are no other indications of inflammation, and no enlargement of the lymphatic glands.

By contrasting the subjective evidence of disease in these two cases of cancer of the larynx, it will be observed that it is to a large extent the situation of the tumour that determines the symptoms, and that from a study of these alone, without the help of a laryngoscopic examination, a reliable diagnosis could not be arrived at. When a cancerous tumour is situated in the upper part of the larynx, as in the first case, the most prominent symptoms are pain over the larynx, and extending upwards to the ear, difficulty in swallowing, hoarseness, but not aphonia, the lymphatic glands are involved early in the course of the case, but cough is seldom severe, and dyspnœa develops only when the growth is of considerable size. On the other hand, should the tumour be situated, as in the second case, in the lower portion of the larynx, pain is seldom complained of, the patient has little or no difficulty in swallowing, the lymphatic glands are not involved early in the course of the disease, but aphonia, cough, and paroxysmal dyspnœa are early and prominent symptoms.

Departing now from the consideration of these particular cases, it may be generally asserted that, for diagnostic purposes, symptoms arising from functional disturbance are, when taken by themselves, not of great value; thus, you may have all the subjective symptoms of tumour without any growth being present, and on the other hand, a tumour may exist for a considerable period without giving rise to any disturbance of function.

The diseases which attack the upper air passages may disturb the functions of these parts in the following ways :— First, by impeding respiration as a consequence of narrowing of the lumen of the air passages ; second, by producing cough, and increase in expectoration ; third, by inducing certain alterations in the voice ; fourth, by causing difficulty or pain in deglutition ; fifth, by producing certain abnormal sensations in the affected parts, or in other situations, as a consequence of reflex irritation.

In the present lecture, our attention will be limited to the two first mentioned class of symptoms—namely, the disturbances of respiration, and cough.

Dyspnœa is observed in all cases in which air fails to reach the air-vesicles of the lungs, or where the pulmonary circulation is imperfect ; in other words, it is evidence of defective oxidation of the blood, due either to an imperfect supply of air, or to a deficiency in the flow of blood through the lungs. From either of these causes the blood comes to contain an abnormally large amount of carbonic dioxide, as well as a diminished amount of oxygen.   The toxic influence of the carbonic acid gas, by acting upon the respiratory centres in the medulla oblongata, produce grave disturbance, which, if not relieved, occasion violent convulsions, followed shortly by death.

Disturbances of respiration may be due to so many different causes that at the very outset we must eliminate all cases in which dyspnœa arises as a consequence of cardiac or pulmonary disease, or from necrotic lesions other than those of the laryngeal nerves.   Excluding the class of diseases just mentioned, obstruction to the entrance or exit of air may result either from narrowing of the trachea or larynx, or from some lesion of the nasal passages and pharynx.   The causes of dyspnœa may therefore be discussed according to the locality primarily involved.

Laryngeal dyspnœa varies in degree, not only in proportion to the apparent amount of obstruction, but also according as the disease is acute or one of old standing.   It is, indeed, remarkable to observe the great physical obstruction which may exist, consistent with life.   Again, in an acute disease the lesion within the larynx may not in itself greatly oppose the current of air passing to and from the lungs, but being associated with spasm of the adductors, it may give rise to distressing or even fatal dyspnœa.

The two following cases illustrate very clearly the difference

in the dyspnœa arising from a slowly developed stenosis, and that consequent upon an acute lesion.

In the first case, that of a female, aged 18, suffering from acquired syphilis, a gumma slowly developed at the lower part of the epiglottis and gradually extended along the aryteno-epiglottidean folds until it ultimately involved their anterior two-thirds. The gumma then necrosed and ulcerated, and after three months the patient began to complain of some difficulty in breathing, as a consequence of narrowing of the glottis from contraction of the cicatricial tissue. In this case, during the development of the gumma, there was comparatively little dyspnœa, even although the lumen of the larynx was greatly reduced, and now, when the narrowing of the air passage is so marked that it is with difficulty a No. 12 urethral bougie is passed through the larynx, the patient only occasion-ally complains of difficulty in breathing. The respirations are, however, more rapid than normal—twenty to twenty-four per minute—the voice is completely lost, and both inspiration and expiration are accompanied by a harsh blowing sound. But while at the present time the obstruction is not sufficient to cause dyspnœa, it is probable that the cicatricial tissue will continue to contract, or at any time œdema of the laryng-geal mucous membrane may supervene, and threaten the life of the patient.

In the second case, I was asked by Dr. Alex. Patterson, in June, 1886, to see this patient, who was admitted to Ward XIV in the Western Infirmary, on the 29th of May, suffering from pain in the region of the larynx, paroxysmal dyspnœa, aphonia, and severe hæmorrhage from the throat. The history of the case may be shortly stated as follows :— The patient was occupied as a marker at a rifle range, and while firing was going on at a distance of 500 or 600 yards, a ball struck the edge of the target, and a splinter was thrown off, wounding him on the right side of the larynx, at a point corresponding to the crico-thyroid mem-brane. The wound was small in size, but was followed by considerable inflammation of the surrounding parts. The patient was first seen by Dr. Gilmour, of Duntocher, who sent him, on account of the severity of the hæmorrhage, to the Western Infirmary, under Dr. Patterson's care. I saw him about ten days after admission, and at Dr. Patterson's request I attempted to make a laryngoscopic examination, but this I found, on account of the irritable condition of the fauces, to be impossible without the free use of cocaine. The first examination caused some hæmorrhage from

the larynx, so that I was compelled to desist from further interference. Three days afterwards I anæsthetised the larynx, and succeeded in getting a clear view of its interior. The mucous membrane was swollen and injected. On the right side I could not discover any further change, but on the left side, during a slight contraction of the parts, I observed a little dark body appearing, not larger than a split mustard seed. On passing a probe into the larynx, and finding this body firmly attached to the mucous membrane covering the left ventricle, I introduced Schrœtter's laryngeal forceps, seized the body, and with a little force, succeeded in removing the piece of lead I now show you. It is flattened, and marked by the grooves of the forceps, and as now seen, measures about one-fourth of an inch in length, and one-sixth of an inch in breadth. It is somewhat triangular in form, and not thicker than a visiting card. After its removal I carefully examined it, and found that at one point it presented a metallic lustre, while, elsewhere, it was dark and dull. From this I concluded that the entire fragment had not been removed, but that a small portion still remained, impacted probably in the thyroid cartilage. Since the operation, the patient has completely recovered the use of his voice, and now the only thing he complains of is a slight clicking in the larynx when he performs certain movements.

When obstruction is slight, the patient may complain of difficulty in breathing only when an undue demand is made upon the respiratory organs by increased mental or physical exertion, as, for example, in speaking, crying, walking, or climbing. In such cases there may only be a prolongation of the respiratory act and a diminution of the period of rest, or there may be an actual increase in the number of respirations per minute. In higher degrees of dyspnœa, from mechanical obstruction, the accessory muscles of respiration are brought into play, and stand out prominently under the skin, the shoulders are raised, and all the muscles of forced inspiration labour to expand the chest; and when this is accomplished, without any interval prolonged expiration follows, and both the inspiratory and expiratory acts are associated with a loud crowing or metallic laryngeal sound.

In extreme cases, especially where the obstruction has formed rapidly, embarrassment of respiration having existed for a short time, the breathing is suddenly attended by a shrill, piping, or snoring stridor. These stridulous inspirations, which are at first short, gradually become prolonged, until

spasm of the glottis sets in, and the entrance of the air is sus-
pended. During the attack, the patient sits up in bed, and all
the respiratory muscles of the abdomen and chest are brought
into play, while the air in the lungs becomes rarified, as shown
by sinking of the lower part of the thorax, indrawing of the
supra-sternal notch, and the apices of the lung. In children,
there may be considerable flattening of the epigastric and
hypogastric regions, or even of the lower end of the sternum,
so that a deep furrow is formed between the chest and
abdomen.

At first the face is flushed, but almost immediately after
the countenance becomes anxious and the complexion pallid,
the eyes stare, the eyeballs roll, the pupils contract, the head
is thrown back, and the neck arched forwards, while the face
is covered with cold perspiration, the nostrils dilated, the
superficial veins gorged with blood, and the fingers closed over
the thumbs, which are flexed on the palms, and the hands
flexed upon the wrist, or all the digits may be forcibly ex-
tended. The whole expression of the face and body give
evidence of a fearful struggle for life.

These attacks are occasioned by the narrow opening in the
glottis becoming suddenly obstructed by inflammatory pro-
ducts, by œdema, or by spasm of the adductor muscles of the
larynx. When, from the last mentioned cause, the paroxysm
may pass off, only to recur again, and if proper treatment is
not promptly adopted, the attacks of spasms may be the fore-
runner of a fatal termination.

In laryngeal disease the obstruction is most marked during
inspiration, except in pedunculated, sub-glottic tumours, where
the tumour may act like a ball-valve against the exit of air.

A distinction may be drawn between dyspnœa resulting from
inflammatory or other deposits in the larynx, and that which
is a consequence of paralysis or spasm of the laryngeal muscles.
Generally in the former class of diseases both inspiration and
expiration are interfered with, and accompanied by a harsh
snoring sound, there being a permanent physical obstacle to
the passage of air in both directions, whereas in the latter
inspiration alone is laboured and noisy, expiration being rapid
and free from any marked sound. This distinction is import-
ant, and, when it can be made out, may assist one materially in
forming a diagnosis. However, in not a few cases of acute
disease, for example, in diphtheritic croup, the causes of
obstruction to respiration are so complicated that the diagnosis
cannot be assisted by observations of this kind. Laryngeal

dyspnœa may be either *continuous*—as in tubercular disease, tumours, syphilis, and anchylosis of crico-arytenoid articulation; *intermittent*—as in bilateral paralysis of the recurrent laryngeal nerves, where it only occurs as a consequence of undue exertion; *or spasmodic*—as in laryngismus stridulus, &c.

Occasionally peculiar forms of disease present themselves, as exemplified in the following case. The patient, a female aged 36, was sent to me by Dr. Marshall, of Crieff, and gave the following account of her illness. About eighteen months before I saw her she became conscious that "there was something wrong with her throat," but as she did not suffer any pain, and felt but little inconvenience, she did not complain. Gradually, however, the discomfort increased until I saw her. She was then able to breath freely while standing or when lying upon her face, but when she held her head erect, or lay upon her back or either side, as she described it, her "breath was caught at once." Alterations in position always produced the same results, and sleep was almost impossible except when the body was in the prone position. On laryngoscopic examination, a large cyst, the size of a pigeon's egg, was discovered, fixed by a narrow pedicle to the middle third of the posterior surface of the epiglottis; when I removed the cyst, normal respiration was at once restored.

The causes of laryngeal dyspnœa may be classified as follow :—

I. *Acute Diseases.*—Diphtheria, fibrinous croup, acute laryngitis, suppurative laryngitis and abscess, impaction of foreign bodies in the larynx or œsophagus, traumatic lesions, spasm of adductor muscles of the vocal cord.

II. *Chronic Diseases.*—Stenosis from contraction of cicatrices, simple inflammatory induration, tubercular and syphilitic lesions of the mucous membrane, perichondritis, anchylosis of the crico-arytenoid articulation, lupus, lepra, simple and malignant tumours within the larynx, tumours and aneurisms compressing the larynx, neurotic lesions (bilateral paralysis of recurrent laryngeal nerves, unilateral paralysis of abductors), membranous webs.

I have already referred to the circumstance that in acute disease the dyspnœa is more marked in proportion to the apparent physical obstruction than in chronic affections. This may be attributed to two causes: in the former, firstly, there is more intense local irritation, and hence there is greater likelihood of the primary obstructive lesion being complicated by paralysis or spasms of certain laryngeal muscles; and

secondly, in acute disease sudden œdema of the mucous membrane is more apt to occur than in chronic affections.

All observers who have had opportunities of watching many cases of diphtheria, must have noticed that in children the amount of obstruction observed during life is by no means accounted for by the anatomical changes discovered after death. I have, indeed, seen instances where only a small deposit of membrane could be detected in the air passages *post-mortem*, even when there was abundant evidence to show from the condition of the heart and lungs that the patient died from asphyxia.

Acute œdema of the larynx, as a secondary phenomena to severe inflammatory affections of the throat, or as a sequela in scarlatina, in small-pox, in enteric fever, and in tubercular or syphilitic disease, although fortunately a comparatively rare affection, is one which, when it occurs, must be dreaded on account of the great danger to which it exposes the patient. There are two varieties of œdema of the submucosa, the one just referred to, and simple serous infiltration of the mucous membrane and the submucous tissue, without any previous laryngeal disorder. This latter variety is very rare, and therefore I do not hesitate to detail to you a case which came under my observation some years ago.

The little child was in its crib at six o'clock A.M., and was then apparently in good health. The nurse fell asleep, and at eight o'clock went to rouse the child, when she found it dead. At the *post-mortem* examination, which was made about twenty-four hours after death, there was evidence of acute œdema of the larynx. The mucous membrane was injected, and there was a collection of pure serous fluid in the submucous connective tissue of the ary-epiglottic folds, in the ventricular bands and at the base of the epiglottis; but the vocal cords were not swollen to any extent. On section, very little fluid escaped, and in some parts the membrane presented a peculiar sodden appearance. The only other organs which showed anything abnormal were the lungs, the pleural surfaces of which were occupied by numerous punctiform hæmorrhages.

In children, as well as in adults, this disease is very fatal, whether it be due to pre-existing disease or not. According to Sanné the greatest mortality occurs between the ages of 10 and 30 years; and of these cases nearly 85 per cent prove fatal.

Limited œdema affecting the inter-arytenoid fold not uncommonly gives rise to aphonia by preventing the approximation of the vocal cords, but it is not frequently met with as

a primary affection, is usually chronic in its nature, and seldom gives rise to dangerous symptoms.

Tracheal dyspnœa is very liable to be mistaken for laryngeal. It is, therefore, necessary not only to shortly enumerate the lesions which may lead to obstruction to the passage of air through the trachea, but it is also advisable that you should know how to distinguish a purely laryngeal obstruction from a tracheal, or from a laryngeal obstruction complicated by diminution in the lumen of the trachea. Both causes of dyspnœa may co-exist, as I shall demonstrate to you presently. The lesions of the trachea which impede the entrance and exit of air are very similar to those which attack the larynx, but from the greater length of the trachea, and on account of its anatomical relationships, the lumen is more liable to be reduced by the pressure of aortic aneurisms, enlarged glands, extrinsic neoplasms, arising from the œsophagus, the spine, the sternum or the soft parts of the neck and thorax.

In diagnosing purely laryngeal from tracheal or bronchial dyspnœa, the following valuable differential symptoms should be noticed :—

In laryngeal obstruction the head is thrown backwards, inspiration, and perhaps also expiration, is accompanied by whistling, snoring, or metallic sound. This croupy respiration is preceded and accompanied by aphonia or some distinct alteration in the character of the voice, and during the time the dyspnœa is marked the larynx may be observed to move unduly. On inspiration, the larynx is dragged down on account of diminished intra-thoracic pressure. At the same time the thorax becomes distorted equally on both sides by drawing in of the cartilages of the lower ribs, and by sucking in of the apices of the lungs. The character of the cough is not such an important and useful guide as one is apt to suppose. The presence or absence of this symptom depends rather upon the nature of the lesion than upon its situation. For example, in tubercular stenosis the mechanical irritation not only produces a severe paroxysmal cough, but also acute pain ; whereas, on the other hand, in syphilis, even although the disease may have produced greater destruction of tissue and very marked narrowing of the larynx, cough and pain are not much complained of.

In tracheal stenosis the head is kept in its natural position or thrown forwards, inspiration and expiration are equally impeded, and both acts are accompanied by a rough blowing or wheezing sound. The stridor is free from the metallic and

harsh ring of laryngeal stenosis, and is not necessarily preceded or accompanied by much alteration in the voice, unless it is simply weakened by diminution in the amount and force of expired air. However severe the dyspnœa may be, the larynx remains stationary. When the obstruction is above, or at the bifurcation of the trachea, the appearance of the thoracic wall and the physical signs are the same as in laryngeal stenosis, but if the lesion is situated in a bronchial tube, then not only will the distortion of the chest wall be more marked on one side than on the other, but also the physical signs will show that air is not entering both lungs equally. Laryngoscopic examination will, in most cases, clear up the diagnosis. In many cases laryngeal disease is associated with a similar morbid process in the larger air tubes, or it may be complicated by pressure upon the trachea.

The following cases illustrate some of the difficulties that may be met with when not only the larynx is involved, but when there is also tracheal obstruction caused by pressure from without, or from extension of the disease downwards.

The first case was one of aneurism of the arch of the aorta pressing upon the trachea and left bronchus, to both of which it was firmly attached. The history of the case will be narrated more fully in a future lecture. when we come to discuss the neurotic lesions of the larynx resulting from pressure of aneurisms upon the vagus or recurrent laryngeal nerves. For my present purpose, it is sufficient to state that, in the early stage of the disease, the patient only suffered from aphonia as a consequence of recurrent paralysis, and the only physical sign supporting the diagnosis of aneurism was a difference in the strength and rhythm of the radial pulses. But within a short time paroxysmal tracheal dyspnœa developed, and was associated with partial suppression of the respiratory murmur on the left side. During the paroxysms of dyspnœa, the inspiration was associated with a whizzing noise, while expiration was free and noiseless; the head was bent forwards, and the larynx remained practically stationary during respiration. There was no cough, and the patient was able to allow a rapid laryngoscopic examination to be made, thereby permitting the position of the vocal cords to be observed. As they were found to occupy the same position as at other times, I therefore concluded that the dyspnœa was tracheal rather than laryngeal, and this opinion was supported by subsequent observations which will be referred to in a future lecture.

The second case was one of sarcoma of the larynx, which

Dr. Charles R. M'Lean of this city asked me to see with him a few days ago. The growth in the larynx was not sufficient in size to cause the distressing dyspnœa and the marked dysphagia which the patient complained of when I saw her, but the peculiar character of the breathing led me to suspect obstruction at a lower level than I could see with the laryngo-scope. On deep palpation of the neck, the patient being greatly emaciated, a tumour was discovered extending down-wards between the œsophagus and trachea, from the level of the thyroid cartilage to that of the upper end of the sternum. In this case I have no doubt the lumen of the trachea was considerably less than that of the larynx.

Until now I have limited your attention to dyspnœa arising as a consequence of bronchial, tracheal, or laryngeal disease. While it is true that serious obstruction to respiration is most commonly caused by lesions situated below the level of epiglottis, still you must remember that there are diseases which may be situated above that point which may not only impede, but actually prevent, the entry of air to the lungs. For example, in acute inflammation of the pharynx or tonsils, from any cause—infective, traumatic, syphilitic, or tubercular —there may be great swelling, either from infiltration of the tissues, with inflammatory products, or from œdema. These diseases may occasionally cause great difficulty in swallowing, noisy inspiration, and alteration in the voice, as well as severe dyspnœa. The rough snoring noise produced by pharyngeal obstructions is very different from the stridulous respiration observed in laryngeal or tracheal disease, the voice has a nasal intonation, or may be reduced to a whisper. The difficulty in breathing is not much relieved by opening the mouth, as it is when the obstruction is in the nose or naso-pharynx. In pharyngeal disease, especially when it is of an inflammatory or malignant nature, dyspnœa is accompanied by considerable alteration in the secretions of the mouth, the smell of which may become very offensive. The mucus and saliva become viscid, and form crusts which clog the tongue, mouth, and pharynx of the patient.

When the obstruction is in the nose or naso-pharynx, the dyspnœa is not severe, as the patient, when nasal respiration is found to be difficult, can relieve himself by opening the mouth.

Nasal obstruction may be limited to one side, or it may be bilateral. The most common causes of nasal obstruction are mucous polypus, enlargement of the turbinated bodies, inflam-

mation of the nasal mucous membrane, deviation of the
septum, and naso-pharyngeal growths, benign or malignant.

If inspiration is impeded and expiration is free, the obstruct-
ing mass is most probably situated anteriorly, while, if the
opposite condition of matters maintains, the likelihood is that
the obstruction is at the posterior part of the nose. In some
cases the amount of resistance to the passage of air varies
with the position of the patient, as, for example, when there
is a large pedunculated growth in the posterior nares, which
falls from side to side, and obstructs one or other nostril
according to circumstances.

When both nostrils are occluded the patient breathes entirely
by the mouth, and respiration is accompanied by a character-
istic snuffling sound. The voice also is altered, having
imparted to it a peculiar quality devoid of nasal resonance.
Should the obstruction be situated in the posterior nares or
the pharyngeal cavity, the respiration is more snoring, espe-
cially so during sleep. This session, in the case of a young
man from North Uist, we had an excellent example of com-
plete nasal obstruction, a result of the whole cavity of the
naso-pharynx and the upper two-thirds of the pharynx being
occupied by a polypus which, after removal, was found to
weigh over 3 oz. For the last two years the patient has
been unable to breath through his nose, and now, on account
of the large size of the growth, which hangs down upon
the epiglottis, even oral respiration is difficult.

Snoring respiration in children, and the tendency they
have to go about with their lips apart, give them a stupid
and weak expression, and are the first points which attract
the parents' attention, or suggest to the surgeon that some
diseased condition exists in the situation indicated.

Congestion of the highly vascular and erectile turbinated
bodies is a common cause of temporary nasal obstruction, as
seen in ordinary cases of nasal catarrh, but when these bodies
are hypertrophied to a considerable degree, permanent occlu-
sion of the nostrils may be established. In some cases, again,
the obstruction is constantly recurring either as a result of
direct mechanical irritation, or the erection of the mucous
membrane may be reflex, stimulation of one part of the upper
portion of the sympathetic nervous system causing, through
the vaso-motor nerves, dilatation of the vessels in another part.

Dr. John N. Mackenzie, in the *American Journal of Medical
Science*, for July, 1883, has contributed a valuable paper, in
which he points out that not only may irritation of the

respiratory tract cause engorgement of the turbinated bodies, but that there is an intimate physiological relationship between the sexual apparatus and the erectile structures of the nose. That in certain individuals the inhalation of dust, or pollen, or changes in the temperature of the inspired air, may cause sudden enlargement of the turbinated bodies, has long been recognised, but it is only within recent times that the intimate physiological relationship between the various erectile tissues has been fully appreciated.

I have frequently observed in practice that female patients suffering from enlargement of the turbinated bodies, complain that the obstruction is greater, and the symptoms aggravated during the menstrual period. This fact is specially noticeable in cases of so-called hay-asthma, where usually the turbinated bodies rapidly swell up and close the nostrils. One of the first cases which attracted my attention to the relationship between the nasal and reproductive organs was that of a young married lady who suffered severely from hay-asthma. For two years previous to her marriage she was subject to attacks during the first day of each menstrual period. These attacks began by paroxysms of violent sneezing, followed by an abundant secretion of watery mucus, and complete closure of the nostrils by the swollen erectile tissue. There was profuse lachrymation and severe pain over the eyeballs, and before the attack passed off the patient suffered from paroxysmal cough and considerable dyspnœa. These attacks usually lasted for two hours, and only occurred during the period of menstruation. I first saw the patient four months after her marriage, and at that time she was suffering as severely as ever. On examination I found both inferior turbinated bodies much hypertrophied, and the middle turbinated bodies were certainly larger than normal. Before resorting to the radical treatment of the disease by reducing the size of the turbinated bodies with the electric cautery, at the request of the patient, I tried the effects of palliative treatment, in which I did not place much confidence, as I was careful to explain at the time. Two months after, the patient called upon me rejoicing in the complete freedom from attacks. I noticed that the turbinated bodies were slightly reduced in size, but found some difficulty in understanding the sudden disappearance of the symptoms. I did not see the patient again for fully twelve months, when she told me she had a child five months ago, and that during the time she was pregnant she had been quite free from hay-asthma, but during the last two menstrual periods the attacks had returned, and

been as severe as formerly. The patient was now quite willing to have the turbinated bodies cauterized, an operation which I performed with the most beneficial results.

The next symptom demanding attention is cough, which, because of certain peculiarities to be mentioned presently, may be distinguished as of laryngeal origin in some cases; but before entering upon this subject, it would be well to make a few observations respecting the etiology of this symptoms.

Only by studying the physiology of cough and the pathology of the morbid conditions giving rise to it, can one explain why this symptom should be present to a marked degree in some diseases of the larynx, and almost absent in other equally severe lesions. The act of coughing, voluntarily or involuntarily, is exercised either for the purpose of expelling, by means of a forced expiratory effort, certain substances which act as sources of irritation at the back of the mouth, in the glottis, trachea, or bronchi, or as the result of reflex irritation. The stimulus is most commonly conveyed by the excitor fibres of the superior laryngeal nerve, which transmit it to the vagus, thence to the centre in the medulla oblongata. As a consequence of the impression so transmitted a motor impulse is communicated to the muscles of the larynx as well as to those of respiration.

The first stage of the act of coughing is a long inspiration which inflates the lungs; this is followed rapidly by spasmodic closure of the glottis, the adductor muscles acting forcibly, while at the same time the epiglottis is drawn backwards and downwards, and folded on its long axis. Then the muscles of expiration, by a violent exertion, submit the air within the trachea to such pressure that the glottis is forcibly opened, and a sudden blast of air escapes, carrying before it the obstructing or irritating mass. Therefore, considered from a physiological standpoint, coughing may be regarded as a means of protection, its design being to remove any irritating particles from the upper air passages, either as a consequence of voluntary determination, or as an automatic act.

The etiology of cough has been carefully studied by several modern observers, amongst whom the most important is Kohts. He conducted most careful experiments, from the results of which he proved that the symptom is not equally excited by irritating all portions of the larynx. From experiments, and from clinical observation, it has been discovered that the most sensitive parts are the interarytenoid folds and the posterior wall of the larynx, while irritation of the posterior surface of

the epiglottis, the aryteno-epiglottidean folds, or the false cords, does not so readily induce coughing. Stimulation of the pharyngeal mucous membrane induces one or two short sharp coughs. Severe paroxysms are brought on by irritating the roots of the superior laryngeal or the pharyngeal nerves, while stimulation of the recurrent nerve produces no result.

Laryngeal cough is not always distinguishable from pulmonary or tracheal cough, or from the cough due to central neurosis. The most characteristic laryngeal coughs are those observed in recurrent paralysis, and in tumours of the larynx. In the former the cough is peculiarly imperfect, wanting in proper explosive quality, and when once heard it is so readily recognised that even as an isolated fact it is sufficient at once to suggest to the observer the existence of some diseased condition of the recurrent laryngeal nerve. Again, in tumour of the larynx, previous to ulceration, the cough, although not a prominent symptom, is characteristic in being voluntary, and indulged in from the desire of the patient to displace a foreign body, and at the same time the sound produced is wanting in tone, hoarse, aphonic, or sometimes even croupy in quality.

In acute disease of the larynx or pharynx severe attacks of coughing are by no means uncommon. For example, in acute laryngeal catarrh, occurring in children, the paroxysms of coughing may resemble those of hooping-cough, inspiration producing a harsh whistling sound, while expiration is shrill and metallic. As the disease advances, the cough alters according to the changes in the laryngeal mucous membrane. When infiltration occurs, and the secretion is more abundant, the cough becomes moist, toneless, or quite aphonic.

As a rule laryngeal cough is involuntary, rough, hoarse, barking, or croupy, and is not accompanied by much expectoration. The presence or absence of this symptom depends upon the position of the lesion as well as upon its nature; hence we find that diseases involving the posterior part of the larynx or the inter-arytenoid fold frequently give rise to severe coughing, whereas other equally severe maladies, limited to the upper surface of the cords, the ventricular bands, the epiglottis, or the aryteno-epiglottidean folds may exist without presenting this symptom.

Again, it must be borne in mind that, in long continued disease of the mucous membrane, its irritability may be greatly reduced, so that while involuntary cough may have been an early indication of the morbid process, late in the case cough ceases to occur, unless as a distinct act of volition,

performed for the purpose of expelling foreign matter, or to relieve an abnormal sensation.

There is a form of cough, called "nervous cough," which is well demonstrated by a patient who is at present in the ward. This case has been under observation for a number of months, and repeated examinations have been made of the lungs and larynx, without the discovery of any pathological change in these parts. The cough, which is startling, and has a peculiar sharp metallic ring, occurs in severe paroxysms, the patient being sometimes unable to stop for several minutes, when gradually the attack diminishes, and is followed by short, sharp individual coughs, at intervals of a half minute, or longer. These paroxysms generally arise spontaneously, but may also be excited by sudden exertion, excitement, or change in temperature of the respired air. The coughing is not associated with expectoration; it is absent during sleep, and is not excited by a laryngoscopic examination.

The patient suffers from a movable kidney on the right side, and it is a point worthy of note that, when the kidney is manipulated with the hand, a paroxysm of coughing almost certainly follows, and, when the kidney is kept at rest by an elastic abdominal bandage, the attacks of coughing are diminished in number and severity. The etiological relationship between movable kidney and paroxysmal nervous cough is difficult to trace, unless we suppose that the coughing is a reflex act due to impressions conveyed by nerve fibres, which, when irritated, do not usually produce cough.

Disease of the nose is sometimes associated with hard and hacking paroxysmal cough and dyspnœa. Dr. John Mackenzie, of Baltimore, was the first writer who clearly described and directed the attention of the profession to the close connection which exists between morbid lesions of the nose and paroxysmal cough. He showed that, when the posterior half of the inferior turbinated bodies are irritated either by instruments, or as a consequence of disease, a reflex cough is excited. When one considers how closely sneezing and coughing are physiologically related to one another, the marvel is that, what Dr. Mackenzie calls the "cough zone" in the nose was not discovered long ago.

The following are the conclusions drawn by Dr. Mackenzie from his clinical and experimental investigations :—

"1. That in the nose there exists a definite, well-defined sensitive area, whose stimulation, either through a local pathological process, or through the action of an irritant introduced from without, is capable of producing an excitation,

which finds its expression in a reflex act, or in a series of reflected phenomena.

" 2. That this sensitive area corresponds, in all probability, with that portion of the nasal mucous membrane which covers the turbinated corpora cavernosa.

" 3. That reflex cough is produced only by stimulation of this area, and is only exceptionally evoked when the irritant is applied to other portions of the nasal mucous membrane.

" 4. That all parts of this area are not equally capable of generating the reflex act, the most sensitive spot being probably represented by that portion of the membrane which clothes the posterior extremities of the inferior turbinated body and that of the septum immediately opposite.

" 5. That the tendency to reflex action varies in different individuals, and is probably dependent upon the varying degree of excitability of the erectile tissue. In some, the slightest touch is sufficient to excite it, in others, chronic hyperæmia or hypertrophy of the cavernous bodies seems to evoke it by constant irritation of the reflex centres, as occurs in similar conditions of other erectile organs, as, for example, the clitoris.

" 6. That this exaggerated or disordered functional activity of the area may possibly throw some light on the physiological destiny of the erectile bodies. Among other properties which they possess, may they not act as sentinels to guard the lower air-passages and pharynx against the entrance of foreign bodies, noxious exhalations, and other injurious agents to which they might otherwise be exposed ? "

My own experience quite agrees with Dr. Mackenzie's theory. I shall quote only one case from my private practice, but it is one which demonstrates very clearly the condition we are at present considering.

W. J., aged 54, had been for two years complaining of symptoms of chronic atrophic pharyngitis, accompanied by more or less severe pain in the supra-orbital regions and at the bridge of the nose, almost every week. He also had severe attacks of paroxysmal cough, followed by asthmatic dyspnœa, which, as a rule, lasted for about an hour. On examination, I found the posterior two-thirds of the inferior turbinated bodies hypertrophied, and the mucous membrane covering them of a very bright red colour. After anæsthetising with cocaine hydrochlorate, I cauterized both turbinated bodies freely, and since ten days after the operation, the patient has enjoyed perfect health.

There is another variety of nervous cough which is almost continuous, short, and rhythmic. Dr. M'Bride, in his translation of Gottstein's work, describes this form of cough as follows :—

" Continuous rhythmic cough is not so severe as the paroxysmal variety ; it consists in uninterrupted, regular coughs, varying in loudness. The patient can only interrupt it so as to allow of eating and speaking, which in the other variety is impossible during a paroxysm, and the same applies to laryngoscopic examination.. During sleep the cough ceases entirely, but Ziemssen relates the case of an hysterical lady in whom nervous cough of this kind lasted for weeks without half an hour's intermission by day or night, so that the larynx and the whole system were tired out. In many patients intermissions of several minutes occur, and, according to Schroetter, the condition becomes worse when the sufferers know that they are being watched. According to the same author, some patients can partially check the affection by an effort of will, while others, on the contrary, become worse when called upon to exercise volition. In conjunction with this rhythmic cough there may be also observed twitching of other muscles, especially those of the face. In a case observed by us, cough and facial twitching alternated so that the cough lasted for weeks, and then twitching set in as soon as it ceased, and *vice versa*."

As far as my experience goes, this variety of cough is very rare ; I have seen only two cases which could be placed in this category.

MADURA FOOT IN ITS INITIAL STAGE.
Case No. II.

By WM. HUNTLY, M.A., M.D.,
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Some time ago I sent a notice of a case of this affection, and since then another case has come under treatment of a similar kind, the disease being a few months farther advanced than in the first (see *Glasgow Medical Journal*, November, 1889, page 344).

In the beginning of September, 1889, a villager came to hospital for treatment of a sore on his foot. He was a Hindoo, a day labourer in the fields. The history was imperfect, and I am of opinion that the native exaggerated

the duration of his trouble, the better to gain more sympathy and attention. Between two and three years ago he noticed what looked to him like a little blister or boil. This burst, and some blood and pus came out. After a time this dried up. Shortly after the sore began to pain him, and another pustule appeared beside the first one. From this one he noticed black particles coming out along with the blood and pus. In course of time other pustules formed and burst, the sore gradually enlarging round about the original focus of inflammation. With reference to pain, he noted that, especially before the bursting of the pustules, the pain was more felt, and so long as the pus, &c., kept oozing out, the pain was relieved. This was all the history.

On examination of the sore the appearances were some-what similar to those described in the first case. The skin was indurated and somewhat congested, inelastic and leathery to the touch, and raised a little above the level of the surrounding healthy skin. The shape was irregular, the tumour lying in the long diameter of the foot, and perforated with round holes. Just at the base of the great toe a single opening was found lying about an inch and a half in front of the main tumour, and surrounded by a circle of thickened skin, yet separated by healthy tissue from the rest of the sore. On pressure, there was felt to be direct communication between the two, and, under the finger, it gave precisely the same feeling as we get in an old fistula in ano.

As far as I could judge, the bone had so far not become affected.

The treatment was exactly the same as in the first case, and up to date the result has been the same—viz., no return. The process of excision was more difficult. The form of the tumour was different. Sinuses projected backwards in the foot, ending in a *cul de sac.* There was also the extension towards the great toe, which was carefully dissected out. The tumour was not a tumour in the ordinary sense of the term. It did not incorporate the tissues into itself, nor did it move freely in them as benignant tumours mostly do. In the tumour, inseparable, yet still preserving the natural colour, were portions of the muscular tissue of the foot. It did not eat into the tissues, but seemed to eat its way among them, and when cut into, resembled nothing so much as a bundle of sinuses welded together with one or two offshoots. The offshoots, as best seen in the one which branched off in front, were round cartilaginous tubes, having, to the eye, a smooth central channel, in which the black particles, with some

fusiform matter, were found. In direction one of these offshoots was seen growing almost directly upwards, and it would have opened somewhere in the side of the foot. In this there is a great difference between those sinuses, and in an ordinary case of a number of sinuses draining caseous glands or other degenerated tissue. In such cases we have an attempt of nature to remedy a faulty direction of an old passage by the formation of a new one, which may enable the fluids to drain off quicker. The process is an attempt at healing. The spread of the sinuses in mycetoma indicates an advance in the stage and progress of the disease, and so far the presence in those channels of the round, black bodies point to these being active agents in the process of advancement, and not accidental, as some have asserted.

The two cases confirm what is held, both by Carter and Moore, that, in the black type of mycetoma, the disease in its initial stages is superficial, and these two cases also bear out the fact that, before the external wound is formed, the black particles are present, and, as I am convinced, are the factors in the spread of the disease.

This power of branching inwards without any external signs is also noted by Carter; but careful palpation of the tissues surrounding the tumour will often reveal the presence of these branching sinuses. Although these ramifications may seem, at first, to encourage the idea that an external opening is not a necessity, on dissection it was seen that all the sinuses communicated with the parent tumour, and with one or other of the openings primarily formed; that openings are desirable is also rendered highly probable, from the fact of the sinus, which extended in front, establishing communication with the outside at its earliest opportunity. Whether all this points to confirming us in the opinion of a fungus being in the black variety of the disease, I leave readers to judge.

To sum up, in mycetomas of the class in which the black bodies are found, the course of events is probably as follow :— First, pain, associated with a boil or blister, the black particles being present before the blister bursts externally. In the beginning the sore is superficial. Following this, we have implication of the surrounding skin, and the formation of fresh sinuses round the parent one. This may be named the first stage. In the second we have the tumour sending off branches in various directions among the tissues, finally, in the third stage, passing into and destroying the bones.

There is one thing very peculiar about those tumours or

sores—viz., that while well known to be local affections, they simulate in physical characters malignant tumours more than benignant ones.   You have a firm, hard lump among the tissues, irregular in shape, giving pain; to eye appearances quickly passing into the ulceration stage; the ulcers or open- ings never healing up; the early implication of the skin; and the tumour firmly attached, and moving with the surrounding tissues, which, in some manner, it supplants and destroys. There is the total absence of any capsule, and very little definement of its limits.   Physically, it would lead us to suspect malignancy, but, on the other hand, the history, the absence of constitutional effects, and the knowledge that complete removal is not followed by a return of the growth have all along stamped it as belonging to the class of non- malignant tumours.   This fact, which I think remarkable, has never been noted before, and certainly the first case I ever saw, before I investigated it, gave me the impression that the tumour might be a malignant one.   It is an exception to the general rule.

With reference to the treatment, careful and complete *excision* of all the sinuses, with their inhabitants, seems preferable to scraping out or scooping out, as is advised in the article on this subject in Professor M'Call Anderson's latest book on Skin Diseases.   These plans have failed, and in scrap- ing or scooping one of the deeper branches, would be very likely to escape notice unless the operator were well acquainted with this peculiarity of the disease.   In excision, the dense cartilaginous character of the sinuses and offshoots, and their peculiar touch to the fingers, will always prove a sufficient guide to the operator.

TWO CASES OF ATHETOSIS.

(With Lithographs.)

By CHARLES WORKMAN, M.D.

In publishing this paper, I wish to explain that it was written with the intention of reading it to the Medico- Chirurgical Society, when I was showing them the cases; but, by a mistake, enough time was not given me to read the paper, or to show a number of illustrations which I had prepared and intended showing with the lantern.   I had, therefore, just to contract what I purposed saying into this paper for publication.

Fig 1

Fig 2
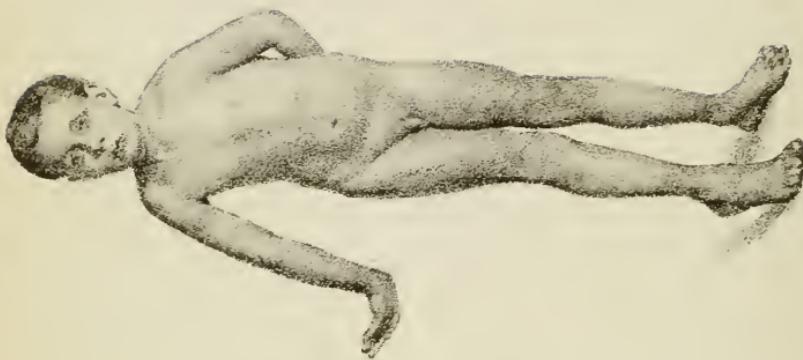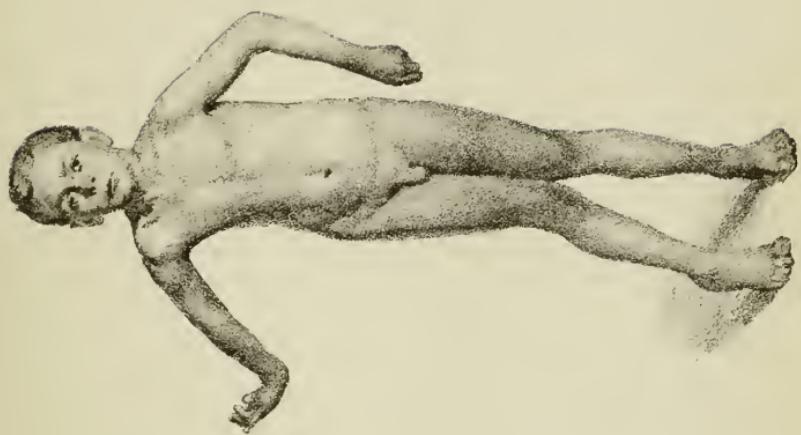
The illustrations which accompany it were taken from Case No. I. They are from photographs taken by myself with the magnesium flash light—exposure about $\frac{1}{30}$ sec. The arms and hand, though in constant movement, are therefore fairly sharp. No. II being a much milder case, did not give photographs worth the expense of publishing.

Case I.—A boy, C. K., æt. 8 years, born April, 1879, seen for the first time in February, 1887. The history which I then got about him was as follows:—

Previous History.—The boy suffered from an attack of diphtheria when he was 3 years old : he was ill with this for nine days. He apparently recovered perfectly, as his mother noticed no paralytic symptoms or other sequelæ. From this time he remained quite well until he was 5 years old, when a little before Christmas, 1884, his mother first noticed the movements in his right arm and hand.

History of Illness.—The first symptom his mother noticed was that the boy's right arm was apt to be held twisted round to his back ; still he had sufficient control over it for eight days or so, that he could use the hand to hold his cup and take his food. Gradually the hand became shaky when he attempted to use it, and he shortly entirely lost control of it, so that he was unable to use it even for shaking hands. In about a week after this his mother noticed one day that he was walking without bringing the right heel to the ground. Since that time, now more than two years ago, the arm and leg have remained in much the same condition. His mother noticed that he was apt to stutter before this condition came on.

Present Condition.—The boy looks big and well nourished for his age, is of fair complexion, with blue eyes and red cheeks. The muscular system is well developed on both sides. The boy's right hand keeps in constant slow movement, the fingers being moved severally and separately. The hand is clenched and opened, and the arm flexed and extended involuntarily, and all in a most irregular manner.

The foot and leg also move a little after the same manner, and the boy walks upon the toe of the right foot, with that toe turned a little inwards.

There is no noticeable movement of the head or face. His mother states that these peculiar movements entirely cease when he falls asleep, and then the arm and leg lie like those of the left side.

I examined the arm and hand with both the galvanic and

Faradic electric currents, and found the muscles respond quite normally.

I treated him several times a week for a month or two with the constant current, placing the negative pole on the back of the neck, and the positive to the muscles and nerves of the hand and arm, and giving 3 to 5 milliamperes for from 10 to 15 minutes each time. Then I tried the current in the opposite direction, and for some time also the Faradic; and for a while I tried passing the current through the head from over one ear to over the other, using large electrodes for the purpose.

After the first few days I thought the electricity was making a little improvement, but then things just went back, and after that it did not seem to make the slightest impression, so that his mother got tired of bringing him, and I felt so hopeless of any good that I did not urge her.

17th January, 1890.—Mother tells me to-day that she did notice after the diphtheria that the food sometimes escaped through the nose. He stuttered more after the diphtheria than he does now. The mother blames the illness on a fright the boy got three weeks before it came on by a mouse running over his foot. The first symptom she noticed was that the hand shook when the boy tried to use it.

When he is asleep there are no spontaneous movements of either arm or leg, but they lie like those of the other side ; and his mother says there is no spastic condition, as she can then move the arm and hand quite freely. On his attempting to move the right arm, the right side of the face is seen to be slightly affected. He was treated for eight months with electricity in the Western Infirmary.

CASE II.—A boy, J. J., æt. 4¼, was first seen by me in the Children's Dispensary in July, 1889.

Previous History.—When a baby the boy suffered a good deal from bronchitis, and he had hooping-cough when 2 years old, and was very ill with it. He has never had any illness but these. When 18 months old he had a discharge from right ear and submaxillary abscess.

On the 1st of June, 1889, a thunderstorm passed over Glasgow, and at that time the boy was standing with his mother at the window, watching, as I understand, the lightning, and the little fellow was holding a halfpenny in his left hand. His mother then noticed that the left hand was twisted back, and the boy was unable to open the hand, so that his mother had to force the fingers open to get the coin

out. From the time of the thunderstorm the left arm and hand have remained only partially under the control of the will, but there has been gradual improvement since I saw him first, and he can now lift even small things without much difficulty. The boy, when sitting quiet, can now keep the hand so still that nothing abnormal might be noticed. When I saw him first, I immediately noticed that the leg was also affected. He was inclined to walk on the toe of the left foot, and to turn that toe in; but so slight was this tendency, that the mother had never noticed it till I called her attention to it.

I examined the arm carefully with the galvanic and Faradic electric currents, and I found the muscles respond well and normally to both. There did not seem to me to be either increased or impaired excitability. From my experience and reading on the subject, I thought it wisest not to treat the case with the electric current. And the result has been, to say the least, much more favourable than in the first case, which I treated for some months in that way.

The mother states that during sleep the hand lies open, and quiet like the other, so that nothing could be seen to be wrong.

I have seen the boy since showing him at the Society, and there is now much less defect in arm or leg.

M. Bernhardt describes the following case in *Virchow's Archivs*, vol. lxvii, 1876, page 1 :—

" Robert Krüger, æt. 12.

" The father and mother both healthy; had twelve children, of whom seven still live; four died when quite young, and the fifth was quite healthy till he was over 15. When attempting to get one of his teeth out for toothache, the diseased tooth was broken, and from that moment there began an ' unruhe ' in all the muscles of his body. This forced his parents to bring him to the Poliklinik in Berlin. After the first application of the constant current, there was evident improvement in the symptoms; but, on removing the remains of the broken tooth, the symptoms returned in an alarming manner. The boy was taken to the Charité Hospital, but was removed from there by the parents, and soon died at home.

" Of the children who are still living, one, a daughter, suffered for six months, when 10 years old, from a severe attack of chorea. She is now recovered, is stout and strong, but still shows a changeable temper, especially with change in the weather, and she suffers at times from ' fits.' The other five children are well and happy.

" Till he was 4 years old Robert was also healthy.

" After an acute illness, which lasted several weeks, the character of the illness cannot now be made out ; but it would appear to have been one of the exanthemata ; there was first noticed a faulty placing of the right foot, and abnormal movements of the right hand. Although these defects continued, the patient went, at the usual age, to the school, and learned his lessons like the other children—only at the beginning he often cried. He learned to write with his left hand.

" The patient is a well developed boy for his age. He is free from fever, and goes about and attends the school. His appetite and sleep are normal. He has often headache, especially in the forehead and temples, where he is also sensitive to percussion ; more so on the left side. His organs of sense are all intact.

" The tongue, on being protruded, goes a little to the right, and shows involuntary contractions.

" The tonsils are enlarged. During sleep there is no inequality of the sides of the face to be seen.

" On attempting to close the eyes, the movement is stronger on the left side, and the left angle of the mouth is a little raised. In smiling, the mouth is drawn a little to the right. Very seldom—perhaps twice in a quarter of an hour—the patient, while speaking, draws the mouth somewhat to the right.

" His speech is soft, but, on the whole, clear and distinct. The left half of the body is intact, both as regards sensory and motor symptoms.

" On the right side the movements of the shoulder and elbow are free, only somewhat slower and weaker than the left; they are also easier resisted. Involuntary movements of the head, shoulder, or forearm are not present. The like is the case with the lower extremity. Dragging pains are felt at times through the whole upper extremity.

" The patient can walk long distances alone. At times then the foot bends over, taking the position of talipes equino varus, and the toes turn towards the ground. He is able to stand for some time on the right foot, and can step right foot first on to a chair. The knee-jerk is present almost equally in both, and ankle-clonus almost equally absent. While the patient is sitting, the right hand and fingers remain quite still if his attention be not drawn to them ; but if his attention be drawn to them, the fingers take on a most wonderful and restless movement. In pretty quick rotation they are adducted and abducted, flexed and extended, especially the thumb, first and

little finger, the other two remaining quieter. The hand remains nearly still, but one notices the movement in the flexors and extensors of the forearm, where the muscles move in ever-changing configurations under the skin. The sensibility of the entire right side is lowered when compared with the left, although it is distinctly present.

"When the patient tries to stop the movement he can only succeed with difficulty, and the effort often only makes the movement more pronounced. The right forearm is thicker, with more volume of muscle than the left, and this can only be accounted for by the involuntary movements, as for years it has not been used for writing, &c.

"The hip and knee joints are perfectly quiet, but one notices a constant slight equino varus position of the foot, a stretching of the tendo Achilles, and a distinct plantar flexure of the toes. There are slight movements of the toes resembling those of the fingers, especially in the evening and at night in bed.

"The father watched the boy at night, and found that the involuntary movements continued during sleep.

"Electrical excitability was present both for Faradic and galvanic currents, and there was no qualitative change in the formulæ on examining by Brenner's method. Heart sounds are loud and pure.

"The disease has lasted seven years unchanged; has been treated for months with a weak constant current through the head, and regulation of the diet, without any improvement."

In cases of athetosis the movements are to be distinguished from those of paralysis agitans of disseminated sclerosis of the brain and cord, and from ordinary chorea.

This disease, or rather symptom, is distinguished from the first by there being no advancing weakness of the muscles as is the case in agitans, by the character of the tremor, which in athetosis is slower and more like voluntary movement. In my cases, the movement ceases during sleep, and this would appear to have been the case with the patient described by Dr. Gairdner in the *Journal of Mental Science,* 1874; but not so in Bernhardt's case.

It is distinguishable from the tremor of disseminated sclerosis by the fact that in the latter the tremor only comes on when an attempt at voluntary motion is made, in athetosis the movement goes on even when the limb is at rest, the character of the movement is also quite different.

Hemichorea is usually easily distinguished from athetosis by the difference in the rapidity of the movements, the absence

in that disease of a spastic condition of the limb, and the weakness of the muscles affected by the chorea. The electrical excitability of the affected muscles is said by Rosenthal to be increased in chorea. On the other hand, in athetosis the electrical excitability would appear to be quite normal.

Where are we to look for the lesion in cases of athetosis ? In order to answer this question, we must endeavour first to exclude those parts of the nervous system which are unlikely to give origin to the disease.

It evidently does not take origin in the peripheral nerves, as the tactile sensibility and electrical excitability are not affected.

It does not arise from a lesion of the cord, as in that case we would have symptoms of nerve degeneration made evident by loss of Faradic excitability and the reaction of degeneration to the galvanic current. Or, if the lateral columns were diseased, we should have spastic paralysis of the muscles existing during sleep.

The lesion is not likely to be of the medulla oblongata, or the pons varolii, as, if it were sufficient to affect such a large number of nerves, it would likely also affect some one or other of the cranial nerves. For instance, if in the anterior part of the pons, it would likely give rise to interference with the facial of the same side as the athetosis, if in the posterior, it would interfere with the facial of the opposite side.

The parts then where we shall most likely find the lesion are :—The cerebral peduncles, the basal ganglia, the internal capsule, the centrum ovale, and the cortex of the hemisphere.

If the lesion were in the peduncle, we should likely often have a lesion of the third nerve on the opposite side from the athetosis, as it there comes into close relation to the pyramidal tract.

In writing on the subject, Gowers says (*Diseases of the Nervous System*, vol. ii, p. 82), " Since the optic thalamus is not in the motor path, disease limited to this must produce the symptom indirectly by disturbing the function of the motor cortex."

Might it not act, as I suggest farther on, by pressure and irritation on the motor path in the posterior limb of the external capsule ?

Gowers says, in continuation, that a case of athetosis, published by Demange (*Revue de Médecine*, May, 1883, Case II, p. 375), revealed a lesion limited to the cortex, Gowers does not say what part.

I am inclined to agree with Bernhardt in thinking that

the symptoms of athetosis do not point to a disease of the cortex, and my reason is this—There have been quite a number of cases of disease affecting by pressure and irritation the motor area of the cortex, and what have been the symptoms ? These chiefly, paralysis, complete or partial, of the muscles supplied by the centres affected, with at times explosions of an epileptic character starting from the muscles affected. In the intervals of these explosions the muscles do not show any such movements as we see in athetosis. If the fits are frequent the paralysis soon becomes complete, and the affected limb tends to atrophy, while in athetosis the affected limb is often stronger and thicker than the healthy one.

The cause of athetosis cannot be injury to the lenticular nucleus or the caudate nucleus, as both of these may be destroyed by tubercle or otherwise without producing any symptoms of paralysis. There are, indeed, no symptoms yet known which can be said to be characteristic of a lesion of these nuclei, and the same is also true of the optic thalamus.

I do not believe that the experiments of Ferrier and others, in order to discover the functions of these basal ganglia, are, so far, of the slightest value for the purpose of localisation diagnosis, and we may apply Vulpian and Ferrier's remarks, " Nous ne savons rien des fonctions spéciales des couches optique," not to the optic thalami alone, but also to the lenticular and caudate nucleii.

One of the most likely parts for the lesion is, then, the posterior limb of the internal capsule. Here the bundle of the facial lies most anterior, next the motor bundles for the extremities, those for the arm being in front of those for the leg. The sensory nerves, including those for the organs of special sense, are farthest back. If, therefore, we have a lesion in the posterior limb, or say in the optic thalamus or in the lenticular nucleus, pressing upon the motor bundles for the extremities, this may give rise to a partial paralysis, and at the same time act as an irritant, giving rise to the athetotic movements. If the lesion be forward, nearer the knee of the internal capsule, we may expect the face to be somewhat involved, and perhaps the foot may be very slightly so. On the other hand, if the lesion be farther back we might have some interference with the sensory nerves on the same side as the athetosis.

In Bernhardt's case there were dragging pains in the arm, and lowering of the sensibility of the face, body, and limbs on the affected side. In my first case, where the sensibility seems to be at most but little affected, athetosis of the facial

muscles is apparently present; in Bernhardt's case there was also some affection of the face.

In one autopsy by Kahler and Pick (*Prager Viertel-jahrsschrift*, 1879) an affection limited to the posterior limb of the internal capsule was found, between the optic thalamus and the posterior part of the lenticular nucleus. Seeligmüller, who quotes this, says that irritation of other parts of the same tract might also be expected to cause athetosis.

ON A CASE OF OCCIPITO-ATLOID DISEASE.*

By ALEX. BRYCE, M.B., C.M.

One of the most interesting, and perhaps the rarest case that has occurred in the hospital this year, was a case of occipito-atlanto-axoid disease, or rather, as I hope to show, occipito-atloid disease becoming atlo-axoid disease later on. Diseases of bones and joints in this region differ both pathologically and clinically from diseases in other parts of the column, for various reasons :—

1. The peculiar structure and outline of the bones themselves, as compared with other vertebræ.

2. The peculiarity of the joints between them.

3. The free and elaborate movements in these joints.

4. The proximity of the medulla oblongata.

Pathologically, in other parts of the column, the disease may be divided into two stages :—

1. The *period of destruction or softening*, in which there is a caries or osteitis interna of the body, probably of a tubercular origin, and an erosion and destruction of the intervertebral fibro-cartilage.

2. The *period of repair*, in which an adhesive form of inflammation takes place, and the laminæ, transverse and spinous processes, become matted together by inflammatory material, which soon becomes a true bony anchylosis; whilst, in the anterior parts, the cavities in the bodies are generally filled by fibrous material, and thus all the parts are strengthened and solidified.

In the particular region to which we are meanwhile devoting our attention there is no intervertebral fibro-cartilage, and the bones are mostly made up of dense material, and not of a spongy, cancellous nature. The disease, as a rule, instead of

* Being part of a paper read before the Paisley Medical Society.

starting in the bone itself, begins as an arthritis of the atlo-axoid or occipito-atloid joint. This is generally associated with bone disease—either caries or necrosis—which bone disease rarely exists separately. The caries and necrosis are of the same nature and disposition as elsewhere.

The joint malady assumes the form known as "white swelling," followed by pulpy degeneration, erosion of the cartilages, caries, and necrosis in the bone, and is usually associated with suppuration. Dislocation generally takes place in this condition, particularly when the disease is in the atlo-axoid joint, and takes the form of a sliding forward of the atlas upon the axis. This is permitted by a softening of the ligaments, and especially the odontoid, or check and transverse ligaments. The atlas may slide forwards symmetrically, but more usually unilaterally. The odontoid process thus encroaches on the spinal canal, and at the same time the spinal cord takes a sharp bend opposite the seat of mischief. Such dislocation is usually very slow—if sudden, death would be instantaneous. The suppurating process set up by the disease tends to invade the soft parts, and an abscess presents at the sides or back of the neck, which is generally retro-pharyngeal; but it may pass into the mediastinum, spinal canal, or even the lung.

The symptoms are slightly different from those in disease in other parts of the canal.

Pain.—Usually unilateral at the back of the head and upper part of the neck, and increased by movement.

Stiffness of Neck.—If in occipito-atloid articulation, there is no nodding movement allowed. If the atlo-axoid, no rotation, but generally both are affected.

Swelling.—(*a*) *At the part*, obliterating the sub-occipital fossa. (*b*) *In the throat*, causing abscess and dysphagia.

Deformity.—Generally dependent on the sliding forward of the atlas. The head is bent forwards and rotated, and the spine of the axis prominent. The head is generally sunk in the pillow, and supported by the hands when the patient rises.

Abscess.—Generally retro-pharyngeal.

Nervous Symptoms.—From implication of the cord.

History.—The history of the present case is of peculiar interest, as illustrating many of the above points.

J. T., æt. 16, was taken ill a year and a half ago with the following symptoms :—

Pain at the back of the neck and head, altogether confined to the right side, stretching round to the forehead, and some-

times causing severe earache, and always increased by movement.

Stiffness in the neck, so great that he was quite unable to nod his head, and only with difficulty and much pain to rotate it. He preferred to lie in bed with his head sunk in a pillow, and if asked to rise always supported his head with his hands. He was not fond of any kind of movement, so much so, that he lay in bed entirely for twelve months.

The history of *swelling* in the sub-occipital fossa is obscure, but certainly he had swelling in the form of *abscesses*, which discharged at the right side of the neck behind the sterno-mastoid. This is all the history I can ascertain up to this point, with this exception, that at the end of twelve months or thereabouts, he got so well as to be able to go about selling newspapers without the necessity of holding up his head with his hands. His head, however, was inclined towards the right side—all nutatory movement being absent, while slight rotatory movement was present.

He remained in this condition for about four months, when acute symptoms supervened; *pain*, with *stiffness in the neck* and *vomiting*, being prominent.

When I saw him his head was inclined towards the right side and bent forward, being supported by his hands. He could not rotate his head without great pain, and preferred to turn his body when asked to turn his head, and he was quite unable to nod. There was a filling up of the sub-occipital fossa and a marked prominence of the spine of the axis. The sterno-mastoids were rigid and fixed, and there were four scars on the right side of the neck. His favourite position was lying on the right side in bed, with his legs curled up and his head sunk in a pillow. He took little or no food, and nearly everything he took was vomited.

On the fourth day after admission he essayed to rise, but had a convulsive seizure. When called to see him I found him suffering from slight convulsive twitchings of the arms and legs, vomiting, pulse slow, slow quiet respiration. He felt very cold, and was apparently deaf. He was not, however, unconscious, nor yet blind, as he could respond to signs. There was strabismus convergens of the left eye, with dilatation of the pupil. He did not seem to be capable of feeling. He could swallow perfectly.

There was no alteration in the symptoms for the next 24 hours, at the end of which time, without any struggle, death occurred.

The condition would seem to have started as an arthritis of

the occipito-atloid joints, followed by disease of the bones, caries and subsequent anchylosis—an interval of rest and renewal of disease in the axis, slipping forward of the atlas and axis after disintegration of the ligaments, and slow pressure of the odontoid process on the medulla oblongata, with death.

Post-mortem.—The brain was removed in the usual way. In putting one's finger in the foramen magnum a rough bony projection could be felt lying across the opening in an oblique manner, so that the little finger could hardly pass through the foramen when thus occupied. Upon close inspection this was seen to be the odontoid process of the axis, the tip of which was quite half an inch above the level of the right side of the occiput, and therefore within the cranial cavity.

The atlas and occiput were quite adherent on the left side by bony union which had to be sawn through before these bones could be separated. On the right side the union seemed also to have been bony, but caries had evidently started afresh, and the bones on this side were separated by a little traction. The atlas was lying in an oblique position as regards the axis and the rest of the column, evidently having slipped forward on the axis, carrying the anchylosed occiput with it. The odontoid ligaments, both lateral and central, as well as the transverse ligaments, had completely disappeared, and thus the slipping forward. On the right side of the atlas, between the neural arch and the transverse process, caries had set in, and this had evidently involved the transverse process, no trace of which could be found, the right vertebral artery lying in its usual position, slightly contorted. The atlas had slipped forward and slightly rotated, so that the right transverse process of the axis lay at a point corresponding to the carious part of the axis, and this, along with the right half of the body of the axis, was inseparably involved in the caries of the atlas, the carious *debris* still lying in position. The left transverse process was perfect, and a little to the inside of and posterior to it could be seen the sawn anchylosed part, evidently corresponding to the left condyle of the occiput.

The odontoid process was bare, rough, and carious, as was also the right side of the process and body.

The right condyle of the occiput was gone and caries had set in in this position.

The base of the brain was covered with inflammatory exudation, extending from the optic commissure right back to the medulla and cord, and in many places pus could be seen.

ON THE PATHOLOGY OF ACUTE AND CHRONIC BRONCHITIS AND BRONCHIAL ASTHMA.

(Continued from page 265.)

By A. G. AULD, M.D.

(Illustrated.)

THE pathology of acute tracheo-bronchitis has been at length considered; but acute inflammation of the finer bronchi, or, what is ordinarily termed capillary bronchitis, yet remains to be described.   This affection is peculiar, and rather intricate. Its proximate causes are frequently obscure, its associated pathology is diversiform, and in its train are lesions which are always dangerous, usually permanent, and often fatal.   Its proclivities are towards the extremes of life, when the cellular elements of the body are most prone to the admission of disturbing agencies, but its season, *par excellence*, is that of childhood, and its victims are numbered annually by thousands from amongst the well nurtured, as from amongst the ill nurtured children in our land.

It usually happens that capillary bronchitis succeeds to tracheo - bronchitis.   The latter affection abates, and the inflammatory process seizes on the finer bronchi.   Or, without such an apparent sequence, without any wave of inflammation springing from the greater branches of the bronchial tree, and steadily advancing towards the smaller, a capillary bronchitis may arise, and proceed variously.   As has already been mentioned, in such cases there can be little doubt but that microbial agencies are at work.   In the former instance, it can readily enough be imagined how catarrhal products, possibly undergoing decomposition, may be inspired into the finer ramifications and excite inflammatory changes.   It may also be surmised how much more favourable to the growth of microbes accidentally inhaled, such irritated bronchi would be, and how a most serious lesion might thus take the place of what would otherwise have been a mild inflammation.   In fact it may safely be affirmed that broncho-pneumonia is always originated by a micro-organism.   These have been discovered as single cocci, as diplococci and streptococci, as bacilli, and as vibriones.   A French chemist, M. Villiers,* has

* *Journal de Pharmacie et de Chimie*, 1885.

extracted from the broncho-pneumonic foci, by Stas's method, a liquid volatile alkaloid, possessing a pungent odour, and causing a burning sensation when placed on the tongue. No doubt this alkaloid is the chemical poison which the organism engenders when in contact with the tissues. The extraordinary virulence of the inflammation in many of these cases is inconsistent with any other theory. Regarding, then, broncho-pneumonia, in its typical form, as an acute specific disease, let us trace the progress of the affection from its commencement to its usual termination. I must reserve, for the present, reference to that special variety of broncho-pneumonia in children, wherein the pneumonia is lobar (pseudo-lobar of Damaschino) and the bronchitis is coincident with, and not primary to, the pneumonic process. I refer, in what follows, to a typical broncho-pneumonia, having for its starting point a capillary bronchitis.

Examining the minute bronchus in the very earliest stage, one is struck with the number of cell forms in the lumen. They are chiefly round epithelial cells, mingled with a few lymph cells. I have already mentioned that when acute bronchitis is experimentally induced in the rabbit, the cylindrical epithelium, down to the most minute ramifications, breaks up into round cells. It is evident that the same process takes place here, for although a few cylindrical cells may be observed in the exudation, which had escaped division, there is no other way of accounting for these round epithelial cells in bronchi which possess only a single layer of columnar cells normally. In this earliest stage it is easy to distinguish the epithelial from the lymph cells, but such distinction is only of very short duration. The bronchial walls show a very considerable infiltration of leucocytes, a uniform infiltration, extending along the walls of the neighbouring alveoli, but as yet the fixed cellular elements of neither bronchial nor alveolar walls have shown signs of division. With these phenomena, the very earliest stage of the affection is ended.

As the inflammation proceeds, the exodus of lymph corpuscles into the lumen becomes very great, is indeed quite disproportionate to what takes place in the larger bronchi at the corresponding stage. This is no doubt owing to the absence in the finer bronchi of a well marked basement membrane. If, as Hamilton imagines, the presence of this structure is the main hindrance to a complete recovery in ordinary bronchitis, as already alluded to (a view which I for one hold to be quite erroneous), it would look as though its absence in capillary bronchitis were equally deplorable. Indeed, the wonder is,

that suffocation from choking of the tubes in this affection is delayed so long, and were it the case that larger areas of the lung became involved than usually happens, a fatal issue would quickly supervene.   Add to this excessive exudation of leucocytes from the vessels of the wall, the embryonic cells of the now actively germinating tissue elements, and it will easily be seen how quickly the bronchus in its entire thickness suffers such a purulent infiltration as almost totally obscures its proper structural elements.   Around it is a thin zone of lung tissue whose epithelium is proliferating and which, together with exuded leucocytes is gradually filling up the alveoli.   Beyond this zone the lung is congested for a short distance, but without showing epithelial proliferation.   It is also evident that the infundibula and terminal bronchioles are becoming stuffed with catarrhal products.   It seems hardly worth while to endeavour to refute the supposition of Béhier, Buhl, Fauvel, and others, that the contents of the alveoli merely gravitated from the bronchi, and that no genuine inflammation takes place in the lung.   At any rate, these authors would surely admit that, even granting aspiration from the bronchi, the result of such would be to excite inflammation around, especially as the catarrhal exudation readily decomposes.   I would look on the inflammation as extending by the bronchi into the lung from continuity of surface, a *superficial* extension, and likewise as extending from the peribronchial fibrous tissue through and through the lung substance—a *deep* extension.   So prone is the inflammation to proceed by the latter method, that even in large bronchi, whose vascular supply is independent of that of the contiguous alveoli, when the inflammatory process extends to the adventitia, proliferated epithelial cells will frequently be observed in a limited number of air vesicles in the immediate vicinity.   In due time, by the continuance of the inflammation, the lobule when cut across may be differentiated into three morbid zones, shading into each other.   In the centre is the bronchus greatly distended, its cavity filled with pus, and its substance almost wholly replaced by pus cells, a few elastic and muscular fibres being occasionally visible.   Round the bronchus is a zone of hepatisation in which the alveoli are conspicuously flattened from the bronchial distension.   In adults this is the ordinary red hepatisation of pneumonia ; in children it is a purulent hepatisation.   Outside of this is a semi-hepatised zone, the alveoli in the case of adults containing chiefly proliferated epithelial cells and fibrin, in the case of children,

leucocytes take the place of the fibrin.* The peripheral lobular zone shows a high degree of congestion, and frequently collapse. Further reference to these phenomena in the alveoli cannot be made here, inasmuch as it goes beyond the province of the bronchial changes, to which I must again refer. As already mentioned, the bronchial wall is uniformly infiltrated at an early stage, with cells derived from the congested vessels and from the fixed tissue elements. The result of the separation from the tissues of their corpuscular elements is to cause sooner or later the death of these tissues. Hence an acute dilatation of the bronchus ensues, which is aided by (1) Collapse of the lung beyond, in some parts, the pressure of the air in the bronchus being the same ; (2) Inadequate rebound of the lung ; (3) Excess of air pressure in emphysematous parts ; (4) Stress of coughing ; (5) Accumulation of catarrhal products. In the inflamed parts, no bronchi can become dilated any further after the zone of hepatisation has been formed, unless ulceration or caseation supervene, as the said zone forms a rigid barrier to any such extension. Ultimately, however, the hepatised part breaks down,† its cells die, the fibrine breaks up into granules, and a peribronchial abscess is formed. By this time the bronchial wall is likewise resolved into an abscess, and the whole blends into a suppurating focus constituting the " vacuoles " described by Barthez and Rilliet.‡ In some cases, as Balzer § drew attention to, in which the bronchus and its surroundings had almost attained to the above degree of disintegration, the curious phenomenon is to be observed of the perfect preservation *in situ* of the columnar epithelium. I have had the opportunity of examining a very good example of one such case. It certainly looks very remarkable, this circlet of columnar epithelial cells in the midst of a purulent mass, which likewise fills the lumen. It is apparent that the pus cells in the lumen are passing from the deeper parts between the columnar cells, and that the latter are not undergoing endogenous division, though pus cells have penetrated into them, easily distinguishable from the epithelial nuclei. The phenomenon recalled to my mind what was apparent in certain cases of chronic bronchitis, then under examination, and on referring to the clinical history I found that this was so here,

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* Cornil and Ranvier, Damaschino, Balzer, Rautenberg, &c., state that they have seen fibrin in some of the vesicles, but this did not exist in any of the specimens examined by me.

† I cannot allude to tubercle in this description.

‡ *Mal. des Enfants.*

§ *Dict. de Med. et de Chirurg. Pratiques,* vol. xxvii.

that is to say, that the case was a chronic, or at least a sub-acute example of broncho-pneumonia, and no doubt Balzer's cases would be found to be similar. It may be laid down as a rule that in acute processes the columnar cells desquamate and proliferate, and naught but round cells are found lining the bronchus, this has been specially emphasised in the previous article. In subacute or chronic processes, on the other hand, the columnar cells remain adherent for long, and they do not show proliferative changes. Others who have observed this preservation of the epithelium in some cases, imagine that a purulent mass has gravitated or been inspired into an other-wise comparatively sound bronchus. While not denying such a possibility, offering no opinion whatever upon it, there can be no doubt whatsoever as to the facts as above stated, in many, if not in most cases. These, then, I submit are the sequent changes in the case of acute inflammation of the finest bronchi—First, round-cell proliferation of the epithe-lium, with escape of leucocytes into the lumen, uniform infiltration of the bronchial wall, with leucocytes extending also in rows along the walls of adjacent alveoli, and progressive acute dilatation of the bronchus. Secondly, continued exuda-tion of leucocytes and germination of the fixed cells both of the wall of the bronchus and of a surrounding zone of lung tissue. Thirdly, filling of the bronchial lumen with pus, almost total replacement of bronchial wall with pus cells, and a zone of hepatised lung tissue surrounding the transformed bronchus; and lastly, fusion and suppuration of bronchial wall and adjacent lung tissue.

Reference has been made to a bronchitis associated with, but not primary to, a lung inflammation, which affects larger areas, and may be lobar in distribution. In this case, the lung tissue from the bronchus inwards is uniformly hepatised, there is no differentiation into zones of greater and less intensity. The alveoli are filled with leucocytes and epithelial cells, the former preponderating. The bronchial wall is infiltrated with leucocytes, and its blood-vessels are greatly dilated, but its proper structures are on the whole well preserved. The epithelium is usually proliferated and reduced to round cells, but in a few bronchi the columnar cells are fairly preserved, but with two or more layers of round cells beneath, pushing them outwards. It is apparent, indeed, that we have here to deal with an inflammation which has simultaneously and very acutely attacked the lung and bronchi. At this stage one of three things may happen. Either (1) resolution takes place in the lung (which is rare) and the bronchitis terminates; or (2)

suppuration supervenes; or (3) the inflammation in the lung resolves, but the bronchitis persists, and becomes worse or even fatal. I propose to term a bronchitis set up in this fashion, *pneumono-bronchitis*.

It is therefore important to recognise, paradoxical as it may seem, that a broncho-pneumonia may arise out of a pneumono-bronchitis. For a pneumono-bronchitis which persists after the lung symptoms have cleared up, proceeds exactly in the same fashion as has been described already, with its peri-bronchial zones, suppuration, and areas of collapse. The question then naturally arises, What is the nature of the primary inflammation which has undergone resolution ? I think there can be little doubt but that it corresponds to the ordinary " croupous " pneumonia of adults. In place of fibrin filling the alveoli, we have leucocytes, and it is noticeable that the pleura is *always* in these cases covered with a thick layer of fibrin. Whence comes it then that fibrin fails to be deposited in the alveoli ?

In endeavouring to account for this peculiarity, let us consider the theory of Virchow,* that fibrinous exudations are, under certain circumstances, interchangeable with those whose characteristic ingredient is a substance allied to mucin. Now, without doubt, a fluid holding mucin in suspension exists in the alveoli in the cases under consideration, and it may indeed be imagined that, as mucin is relatively more abundant in early life throughout the body, that this mucous transformation, so to speak, overtook those exuded products, which would otherwise have given rise to fibrin. Again, consider the theory of Weigert, who attributed the diphtheritic membrane to the coagulation-necrosis of the mucous epithelium, whereby death of the white corpuscles was effected, and hence, on Cohnheim's theory, a fibrinous coagulation ; though, at the same time, it must be said that this doctrine of Weigert's evidently had its source in a previously expressed opinion by Buhl †—to the effect that fibrinous coagulation on a mucous sur-face was effected by a certain transformation of the epithelium. In view of these considerations, I am impressed with the fact that a noteworthy distinction normally exists between the pulmonary epithelial cells of the child and those of the adult. The endothelial-like plates (termed " placoids " by Klein) are more granular in the young subject, and the small granular cells—" intercalary cells " of Küttner—are relatively more abundant. This character of the pulmonary epithelium

* *Spec. Path. u. Therap. and Archiv*, vol. iv, p. 310.
† *Vorlesung. über allg. Path.*

in the child may possibly account for the non-production of fibrin. In this connection it may be mentioned that some authors depreciate any differentiation of the pneumonic processes into " croupous " and " catarrhal ; " and there is much to be said in favour of this. Rautenberg * affirmed that the presence of fibrin was accidental, and due to epidemic peculiarities, constitutional states, and the nature of the irritant; that to define lobar pneumonia as croupous and lobular pneumonia as catarrhal was incorrect ; and that the division into the croupous and catarrhal forms was justified neither macroscopically, microscopically, nor clinically. Aufrecht † corroborated Rautenberg's statements, affirming that red hepatisation was but a hæmorrhage produced by exposure of the pulmonary capillaries, consequent on the separation of the epithelium. It seems, however, unlikely that a satisfactory solution of this problem will be forthcoming until the specific agencies which induce these pneumonias are more accurately determined. Enough, at any rate, has been said to show that the pneumonia of pneumono-bronchitis is in all probability identical in origin and in its intrinsic character with the croupous pneumonia of adults, and which, without becoming itself chronic, may yet leave a bronchitis, which runs through the various stages of the primary affection.

III. Chronic Bronchitis.

There is probably no disease extant of whose pathological anatomy less is known than that now about to be considered. Whether it be that pathologists have not thought it worth while to study this affection by itself, but are content to observe such cases only as crop up in course of examining lesions of the lung, or whether it be that, when observed, its true nature has been mistaken, I know not. Certain it is that no correct account of its pathology — of its minute pathology—is anywhere to be found. One author states that there is atrophy of the membrane, another that there is hypertrophy ; one states that there is new growth of connective tissue, another, that there is atrophy of this tissue. Sometimes it is said the epithelium is destroyed, and, again, that it exists in an embryonic form. The greatest confusion prevails on all sides.

Now a great deal of this confusion, of these apparent contradictions, is owing to the fact that many chronic lesions

* *Oosterreich. Jahrb. f. Kinderheilkunde*, &c., 1875, vol. viii.
† *Deutsche Zeitsch. f. Prackt. Med.*, 1875.

of the bronchi are termed chronic bronchitis, which in reality are not examples of the disease at all. All conditions of the bronchi associated with cough and expectoration of a chronic kind, are referred to as chronic bronchitis. This may be convenient, but it is not scientific. As well might brown induration of the lung, or chronic hypostatic congestion, or phthisis be termed " chronic pneumonia." Chronic pneumonia, however imperfect that expression may be, is reserved for such cases as have grown out of the acute forms of the disease, or which exhibit a slowly progressive inflammatory change. Chronic bronchitis, on the other hand, is applied to conditions of the bronchi which have neither developed out of an acute bronchitis, nor which have at any time exhibited inflammatory changes of a slowly progressive kind. The condition of the bronchi associated with obstructive heart disease is a case in point. Here we have a serous infiltration of the bronchus and a progressive atrophy of its proper structures, yet this is termed a bronchitis. Many similar examples might be cited.

As regards, then, a true chronic bronchitis, regarded as an inflammatory process proceeding from an acute attack, or being chronic from the first, I divide the disease into two great stages—(1) The stage of hypertrophy ; (2) The stage of atrophy.

The Stage of Hypertrophy.—It is certainly a curious circumstance that after an acute inflammation has exhausted itself, in many cases the irritated state of the tissues persists, their blood supply continues abnormally abundant, and they undergo an increase in bulk. A high degree of activity pervades the part. It looks as though the initial inflammation had endowed it with great energy, which, in most cases, continues till its death. How comes it that such tissues are so highly vascular, their former vessels not only undergoing increase in size, but new ones also arising ? It certainly is no tendency on the part of the blood to unduly distribute itself so ; there is a diseased energy in the tissues demanding the supply, a strange inversion of nature, a rushing downwards, instead of a healthy rising upwards. Such hypertrophied structures are diseased, and their hypertrophy is termed by many authors a spurious one. In the case of the bronchus, if recovery from an acute attack has been imperfect, this hypertrophy soon begins. It is a general hypertrophy of all the structures from the epithelium to the adventitia. (See illustration.) The hypertrophy of the epithelium is very marked. Its entire thickness is two or three times greater than normal. The outermost cells are columnar and ciliated,

and there are also many goblet cells. The cilia have a curious appearance. Instead of standing straight out, they are *curved*, and frequently they *converge to a point* (not represented in figure). Sometimes they are of excessive length, at other times, unduly short. I do not believe that these cilia are capable of vibratile movements during life. Extending for some distance between, and also beneath the columnar cells, are numerous transitional or spindle-shaped cells, and instead of one, there are generally two or three rows of round cells underneath, and these round cells also exist in numbers, sometimes in excessive number, amongst the cylindrical cells. The basement membrane is *always* entire throughout, and is very thick, not so much, I think, from an actual increase of structure, as from a condition of œdema—a condition analogous to what is sometimes described by surgeons as "solid œdema." The evidence of the transition of cells through it from the mucosa is very slight. Occasionally a cell process from beneath may be observed extending through a canaliculus, but, on the whole, it must be admitted that at this stage but very few cells are capable of passing the basement membrane. The mass of pus cells in the lumen is almost entirely derived from the surface epithelium and from the glands. The inner connective tissue layer is not generally much thickened; it is, however, changed to what has all the appearance of a granulation tissue. Its elastic fibres are reduced to mere shreds, while it is excessively rich in vessels and cells. The hypertrophy of the muscularis is very marked, its fibres are compactly united, and their rod-shaped nuclei are very prominent and granular, and many of them show proliferative changes. The glands and cartilages are greatly hypertrophied. The cartilages show not only active changes at their periphery —in the perichondrium—but the cells also of the interior show a numerical increase. This is an interesting point. For most authors are agreed in stating that the cartilage cells do not of themselves show active changes in chronic bronchitis. This is owing to the circumstance that the very earliest stage of the affection has been overlooked by these authors, who, however, have correctly enough described certain of the degenerative changes in the more advanced stages. Fischer,* however, in a recent communication mentions that he has observed cases of chronic bronchitis wherein "the cartilage plates were abnormally rich in cells, two or three small cells being enclosed in one capsule." Fitz,† on the other hand,

* *Zeigler's Beitrage zur Path. Anat.,* Band v, 1889.
† *Virchow Archiv,* vol. li, p. 123.

denies such changes to the cartilage cells, but his remarks are confined to cases of bronchiectasis. In some cartilages the cells, as Fischer observes, are included in enlarged capsules; but when the process goes farther, the cells increase and the capsules disappear, and I have observed that frequently in such cases *the individual cells seem unable to secrete capsules around them.* In such cases the ground substance is *cloudy,* and owing to the abundance of the cells is often hardly perceptible. This condition of the cartilage plates immediately precedes a remarkable transformation of them which will hereafter be considered.

But by far the most striking phenomenon in the hypertrophied bronchus is the state of the gland tissues. Looking at the illustration, what an extraordinary appearance this tissue presents! Observe the mucous ducts (D) dilated into immense channels, lined with *columnar ciliated epithelium.* Observe also the acini (Q)—how vastly multiplied they are, and extending amidst the dense and greatly thickened peribronchial fibrous tissue. The appearances are almost suggestive of malignancy. This state of the gland structures, only to be found in early chronic or subacute bronchitis, seems to be a source of great perplexity to certain—and that a very few — investigators who have experimentally induced it. Undoubtedly the most valuable contribution is that of Friedländer,[*] who was the first to observe it, and who described it under the name of "atypical epithelial growth." In his well known experiments on "vagus-pneumonia," Friedländer found that after three weeks a "system of epithelial knobs and canals" had formed in and around the bronchial wall, many of which could be traced in their course to the surface epithelium. Friedländer also remarks that this phenomenon was to be found in dogs in bronchi of the third and fourth dimensions, which normally were without glands, and that it was also to be found in man in these bronchi. After deciding that this atypical epithelial growth is not of a cancerous nature, nor yet is an infiltration into the lymphatics, Friedländer concludes that it "comes out from the superficial epithelium of the bronchi." Referring now to a more recent investigation, that of Cox,[†] who induced a prolonged bronchitis in the rabbit, it was found that on the seventh day "a strong proliferation of the bronchial epithelium took place, described by Friedländer as atypical epithelial increase." Further, "a system of canals and cavities are formed, lined

[*] *Virchow Archiv,* vol. lxviii.
[†] *Ziegler's Beitrage zur Path. Anat.,* Band v, 1889.

with cylindrical, and sometimes with ciliated epithelium, bound up with the bronchus, and ten days after the injection they take the appearance of a gland tissue." Further than

CHRONIC BRONCHITIS—STAGE OF HYPERTROPHY.
Section of entire bronchial wall × 15 reduced.

P, purulent mass in lumen. E, epithelium. B, basement membrane. C, inner connective tissue layer. M, muscularis. D, ducts of mucous glands. Q, gland acini. A, cartilage. F, dense fibrous tissue. H, embryonic cellular mass replacing gland tissue. V, blood-vessels.

referring to Friedländer's observations, Cox says nothing as to the mode of production of these canals and cavities. And further than the bald statement that they are produced by ingrowth of the surface epithelium, Friedländer does not

go; he offers no explanation whatever as to how this ingrowth arises, or in what manner it proceeds.

I may at once state that I am persuaded that this epithelial growth is not derived, by a peculiar process, from the surface epithelium. On the contrary, I can see no reason to regard it as other than an abnormal growth of the ducts and acini of the mucous glands. Owing to the great numerical increase of the acini new ducts are provided for them, and owing to the excessive quantity of mucus which consequently is produced, the ducts are dilated to accommodate it. Again, let us suppose that by the continual new growth of the fibrous tissue around the ducts, some of the latter are cut off from their communication with the surface. The result would be that these ducts would dilate, and form cavities lined with epithelium : one such is represented in the illustration. Two other points come up for consideration. One refers to the presence of ciliated epithelium lining the ducts. Now, normally, ciliated epithelium lines the mucous ducts for a short distance from their superficial openings. Is there any reason to doubt that owing to the excessive epithelial stimulation the cells of a greater range of the duct, or even of its whole extent, become developed into abnormal ciliated cells ? When it is considered that one of the round cells of Debove's layer has in it the potential energy of becoming a ciliated columnar cell, I see no reason to deny, in these exceptional circumstances, the endowment of a similar potentiality to the cells of the gland ducts. The second point to be considered is—How is it that this atypical epithelial growth in these experiments was present in bronchi, which normally contained no glands ? I may say that I have not been able to verify this ; but supposing it did take place, might it not have been by extension from the larger bronchi ? There is no reason that I know of to militate against such a possibility.

The gland acini are in a state of catarrh ; most of them present the appearance of acinus No. 2, depicted in the previous article—that is to say, the cells are distended with mucus, and detached or proliferated, and a few of the vesicles have coalesced. The stroma is exceedingly attenuated. The vessels throughout the bronchial wall are greatly dilated, and are almost entirely confined to the mucosa and submucosa ; in most of them there is arteritis, and in a few there is arteritis obliterans.

The inflammatory thickening has given rise in some bronchi to a certain degree of *stenosis*. This is not very marked,

however.   Wilks,* Andral,† Gintrach,‡ Demarquay,§ and others have described cases of extreme stenosis arising from inflammatory changes alone, without any other complication ; but this is very rare.

The Stage of Atrophy.—After the hypertrophic condition of the various component elements of the bronchus has existed for a time, for years it may be, it gives place to a slowly progressive condition of atrophy.   But in many, indeed in most cases of chronic bronchitis, there are a number of bronchi, those, namely, which exist in emphysematous parts, which exhibit a different form of atrophy, an acute atrophy. I would therefore divide the atrophic process into two varieties—1. Acute atrophy. 2. Atrophy from fibrous substitution.   As regards acute atrophy this, as has been stated, is to be found in the bronchi of emphysematous parts, and sometimes also in collapsed parts.   The bronchus is greatly dilated ; ‖ it is in some parts thrown into numerous folds, often giving it the appearance of a multilocular crypt; in other parts its surface is quite even.   Its columnar ciliated epithelium is intact, the basement membrane is entire, the inner connective tissue layer is exceedingly attenuated, and likewise the muscularis, which may be absent.   The glands and cartilages have disappeared, a thin layer of loose fibrous tissue being all that can be seen external to the muscularis. In other cases the epithelium has gone, but the basement membrane persists.   This form of atrophy is undoubtedly produced by the interference with the blood supply in the surrounding parts.

To return to that form of atrophy which constitutes the true second stage of chronic bronchitis—atrophy from fibrous substitution—I base my remarks in what follows on six cases, in each of which the atrophic process showed a different degree of advancement; and thus I am enabled to trace the degenerative changes from their commencement to their termination.   When the hyperplasia, epithelial and other, begins to cease, marked degenerative processes soon set in. The epithelial activity declines, and though the columnar cells persist for a time, before long the embryonic cells seem to lose the power of developing into ciliated cells, they become spindle-shaped, and apparently desquamate early.   The base-

* *Guy's Hospital Reports*, 1863.
† *Clin. Med.*, 1834.
‡ *Bull. Med. de Bordeaux*, 1844.
§ Quoted by Cyr, *Des Retrécissiments de la Trachea*, Paris, 1886.
‖ Bronchiectasis cannot be discussed in this research.

ment membrane, however, presents no change at this time. The mucous membrane is considerably thrown into folds, and the inner connective tissue layer is very cellular, and its fibres are very indistinct. The muscularis is undergoing fatty degeneration. The layer is not continuous, it is a good deal broken up. This fatty degeneration presents itself as longer or shorter rows of minute, dark granules, replacing the proper muscle fibre. Many of the surrounding blood-vessels are obliterated by the growth of fibrous tissue into their interior. The cartilages are at this stage unequally diseased. Some of them are fairly large, and present the appearance which has already been alluded to—namely, a cloudy state of the ground substance, and a great increase of their cells, which are considerably smaller than normal, and are apparently without capsules. Others, again, show no increase of their cells, which retain their capsules. The former stain deeply, the latter stain faintly. They are hemmed in by a cellular connective tissue, which affects them unequally. But, before attempting to describe the changes they undergo, I must state that I am by no means satisfied as to the true nature of some of them. The subject undoubtedly requires further investigation. Cornil and Ranvier,* for instance, describe some of the cartilages as becoming necrosed, and others undergoing ossification ; Fitz † states that they undergo atrophy from pressure, "a granular tissue proceeding from the perichondrium;" while he also states that the ground substance is passive, and the part played by the cells is questionable ; but he thinks they are active at first. Rindfleisch and Orth ‡ express themselves somewhat similarly. Fischer § could not see evidences of activity in the cells themselves ; he merely notes the cloudy state of the ground substance, forcing in of young cellular tissue containing vessels, and reduction of the cartilage plates to small islands, until ultimately they disappear. Hamilton's description is much the same, a cellular deposit taking the place of the perichondrium, and sometimes loops of vessels projecting inwards, the result being that the cartilage gets dissolved away.|| Grainger Stewart,¶ in describing the wasting of the bronchial wall, states that the " cartilages participate in the process ;" no further description is given. Now, I am bound to say, that in examining the cartilage plates, I have observed a lesion of them, which, as yet, I have not found described, and that is *fibrous transformation.* By this I do

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* *Pathological Histology.*   § *Loc. cit.*
† *Loc. cit.* || *Loc. cit.*, p. 57.
‡ *Spec. Path. Anat.*, 1887.   ¶ *Edin. Med. Jour.*, 1867, p. 41.

not mean their disappearance and replacement by peripherally encroaching fibrous tissue in the ordinary sense. It is a distinct process, and is only to be observed in those cartilages in which the cells are multiplied. The cartilage cells then, instead of being large and encapsulated, break up into *small round cells*, which almost obscure the ground substance. Next, a fine fibrillation, connected with the perichondrium, is seen extending amongst, and apparently involving, the cells. The cartilage cells seem to blend with the fibrillated tissue, until soon they are no longer recognisable. This fibrous tissue has generally a radiating appearance, and ultimately nothing is left of the original cartilage, its place being entirely occupied by this new tissue. This fibrous transformation only overtakes some of the cartilages; but what induces it in these particular instances it is difficult to say. Others have the appearances already referred to by these various authors; they are rendered irregular in outline by the advancing fibrous tissue, and their cells present a shrivelled appearance, and after staining with perosmic acid, it is apparent that they are undergoing a granulo-fatty degeneration.

Next, let us consider the state of the gland tissues at this stage, and the mode in which they atrophy. Even now, occasional dilated ducts, lined with cylindrical epithelium, may be observed gaping here and there. The gland acini are, however, fast disappearing. This is brought about by the gradual infiltration of embryonic cells into their stroma. The stroma thus undergoes thickening, and the infiltration of cells simultaneously goes on. But at the same time, the capsules of the acini undergo thickening—by which I mean the membranæ propriæ. It is apparent, however, that cells infiltrate the alveoli themselves; many of the alveoli also coalesce, and ultimately an embryonic cellular tissue replaces the gland. If the capsules have undergone much thickening, they resist the ingrowth of the embryonic tissue longer.

In cases still farther advanced, the mucosa presents cellular protuberances like papillary outgrowths into the lumen. Many of these protuberances have no lining basement membrane; in others, the membrane persists for a short distance from their junction with the depressed parts of the bronchial wall. Some of them are so constricted at this part as to be pedunculated. Embryonic epithelial cells are to be seen lining these projections, *provided the basement membrane persists*, otherwise ulceration has taken place. It may safely be affirmed that the basement membrane in chronic bronchitis

remains intact—though, no doubt, much attenuated—so long as ulceration does not supervene. In many parts, also, the epithelial cells are disposed in several layers of round and spindle cells. It was long ago affirmed by Raap [*] that in chronic bronchitis a squamous epithelium took the place of the ordinary layer—that is to say, with proliferating cylindrical or subcylindrical cells underneath, and round or oblong and flattened cells above, resembling that of the cornea, bladder, &c. I have never seen this, the only approachment to such being as above stated—proliferating spindle cells next the basement membrane, with round cells above and beyond them. Birch-Hirschfeld [†] states that in minor degrees of bronchiectasis occurring in the course of chronic bronchitis, the cylindrical epithelium persists *so long as the mucous membrane is not ulcerated* (by which it will be seen that he bears out the statement on this point given above), and that if the dilatation is great, the cylindrical cells become flattened out, yet he makes no mention of the appearance described by Raap. On the other hand, it is stated by Trojanowsky [‡] that the epithelium is normal so long as there is no decomposition of the catarrhal secretion. This is a difficult matter to determine; but it is noticeable in this connection that Grainger Stewart refers all the bronchial changes to this circumstance. "It is," he says, "to the changes in the contents of the tubes, then, that I should refer the changes in the membrane, not to a morbid action originating in itself. In the earlier stages, the membrane is unaltered, but as secretion accumulates it becomes granular and opaque; further accumulation and decomposition of the retained material produces, of course, greater irritation, the villous condition and ulceration." [§] In the papillary outgrowths, there are at first vessels to be found; at this stage in fact, as Orth [||] observes, "the papillary outgrowths and mucosa are formed by a granulation tissue." Soon, however, nothing but a cellular mass is to be seen in the mucosa and submucosa. The muscularis has disappeared, and likewise the glands, but islets of cartilage may yet occasionally be noticed. The adventitia also has almost disappeared; it is either atrophied or thickly infiltrated with cells. In a few cases, however, the process has not proceeded so far. In such the mucosa has a *trabeculated* appearance, and contains but a moderate amount of cells. A few muscular

* *Verhandl. d. Würzburger Ges.*, 1850.
† *Path. Anat.*, 1885.
‡ *Inaugural Dissertation*, Dorpat, 1864.
§ *Loc. cit.* || *Loc. cit.*

fibres may also be seen divided by rows of cells and some degenerated cartilage plates. In sections stained with per-osmic acid, the ground substance of these irregular and often broken up plates appears of a dark brown colour, and their cells exhibit numbers of fatty granules. Carmine and other colour staining reagents have no effect on such cartilages— they are, in fact, necrosed.

When the *associated* pathology of chronic bronchitis is considered, it will easily be seen how impossible it is to give a description of the microscopical changes in this affection, applicable to all cases. This especially refers to the stage of atrophy. The state of the surrounding lung tissue modifies, and in great part determines, the course of the bronchial lesion. Interstitial pneumonia always complicates a true chronic bronchitis ; and the same applies to emphysema.

This paper would be incomplete were reference not made to the catarrhal condition of the bronchial wall set up in the course of other affections, allusion to which has already been made. In conditions causing *obstruction to the pulmonary circulation* the bronchial wall is rich in vessels but poor in cells ; and its various structures are sooner or later atrophied. At no time is there any inflammation in the bronchus ; it is in a state of chronic venous congestion, although this may in some cases induce inflammatory changes. The entire wall is thickly interspersed with blood-vessels, and its capillaries seem to have become developed into tortuous channels of considerable dimensions. Owing to the abundance of serous discharge thus produced, the surface epithelium is unable to subsist in a normal condition. No sooner are new cells generated than they are cast off, and a layer of round cells is all that can be seen, with occasional spindle cells. The basement membrane is entire. The state of the bronchial wall in *coal miner's lung* is not very unlike that last described. The bronchus is surrounded by a thick layer of pigment, but there is *no pigment to be seen internal to the adventitia or in the catarrhal secretion*, or if any, a mere trace, which may have been displaced in cutting the section. There are no papillary outgrowths, the surface of the membrane being merely slightly undulated. The lumen is very rich in catarrhal cells, and the surface epithelium is composed of embryonic cell forms. The basement membrane is generally intact, but at some places there is solution of continuity, apparently caused by the passage through it of pus cells. The inner connective tissue layer is excessively vascular, and likewise is the submucosa, which contains large numbers of wide-mouthed

vessels. The elastic fibres are fairly intact; the muscularis is thinned, but otherwise fairly normal. The cartilages show granular degeneration, and the glands are in a state of excessive catarrh. The adventitia is normal or thinned—there is no new growth of fibrous tissue anywhere. What is the cause of this highly vascular and consequently catarrhal condition of the bronchi in coal miner's lung ? I believe the correct explanation to be that given by Hamilton.* He points out that the deposit of pigment is excessive round the branches of the pulmonary artery, causing their compression, and occasionally their obliteration. The result of this will be " a serious interference with the blood circulation, inducing an œdematous state of the bronchial mucous membrane." Careful examination and comparison of the vessels in the pigment masses leads me to accept this view. But no doubt it may be open to objection, as what view is not. It is objected to by Dr. Coats,† but on what grounds he did not state.

(*To be Continued.*)

CURRENT TOPICS.

DR. FINLAYSON ON UNIVERSITY REFORM.—The Scottish Universities Commissioners are receiving an ample response to their invitation for statements bearing on the subject of university reform. Among others, Dr. Finlayson has laid his views before them. The reforms which he advocates are, mainly, the abolition of *compulsory* attendance on systematic lectures, a better development of practical classes and practical instruction generally, and a proper recognition of the value of tutorial classes, with a corresponding increase of the teaching staff.

With his views as to the importance of practical classes

* *Loc. cit.*, p. 67.
† Oral communication.—[My objections are two. In the first place, I have frequently seen deeply pigmented lungs in which the characteristic black masses surrounded the arteries without evidences of catarrh, provided the person had long ceased to be exposed to the dusty atmosphere. In the second place, a compression of an *artery* does not lead, except under special circumstances, to congestion and œdema, the phenomena mentioned being those produced by compression or other obstruction of *veins.*—J. C.]

we cordially agree, and we feel that Dr. Finlayson has done an important service in calling attention in such an effective manner to the subject. He says, for example, " Practical classes ought, indeed, to be the main care of the University authorities. The buildings, the wealth, the resources, and the teaching power should be freely appropriated for them."

While homologating Dr. Finlayson's views as to practical classes, we cannot say the same as to his views of systematic lectures. He is careful to guard himself against the imputation of objecting altogether to lectures; but he does it in such a way as almost to lead to the belief that he is of opinion that lectures had better be done away with altogether, and text-books substituted for them. In our experience, on the other hand, teaching by text-books is a very dead business, and cannot compare with the teaching obtained from a good lecturer. The present system no doubt permits of the existence of bad lecturers; but we are not aware that any perfect system could be devised. That advocated by Dr. Finlayson would probably end in the majority of students resting satisfied with cram-books, and the grind of some tutor who specially laid himself out to prepare men for examinations. While the examination is a necessary evil, our present system tends to encourage a broader system of education than could be expected where teaching aims solely at a pass examination.

The function of a course of systematic lectures, we hold, is different from that of a text-book. The lectures ought to form an introduction to the subject, to place the student in a favourable position for reading the text-book and more advanced works. Hence the lectures need not go over the whole subject, but should so deal with it as to establish certain principles in the student's mind which will enable him to read with intelligence and appreciation. In this view of it each course should be complete in itself, and although necessarily varying from year to year, should be so arranged as each year to take up the main principles of the particular subject. We even go so far as to think that the University Court should insist on all compulsory courses being arranged on this plan. It is quite consistent with variation from year to year, and if the courses so varied were found to be useful by the student, further attendance would naturally follow.

In this connection we venture to point out that the compulsory attendance on systematic lectures is not so onerous as is frequently represented. In a leading article in the *British Medical Journal* for 19th April, it is stated that

" hardly fewer than 500 lectures have to be attended in some of the winter sessions." The truth is that, according to the University Calendar, the whole compulsory attendance on systematic lectures during the four winter sessions of the curriculum amounts only to 700 lectures, or if we add Pathology, 750 or 800. This means that for two hours in each day the student has a lecture to attend. In the summer session there are three courses of 50 lectures, so that the student in his four years will only in three of them have a lecture once a day. Of course the student attends more lectures than this, but there is no *compulsion,* and he must do so because he believes it to be in his interest. It may be said that there is an indirect compulsion. If it be so, then the remedy is to be found, not in abolishing systematic lectures, but in taking precautions that the student is not indirectly compelled to do what the Ordinances do not require of him.

Dr. Finlayson has also something to say on university examinations. He says that *the subject* and not the professor's lectures ought to be the basis of the examination, and that the examining board should be made quite an impartial one. With this we are in entire agreement. There is, unfortunately, some reason for his strictures, as there no doubt exists in some cases a feeling among students that it is absolutely necessary to fee certain professors two or three times. Whatever may be the ground for this feeling, the students have the remedy, to a large extent, in their own hands now that they have a Representative Council to fight their battles for them, and a University Court elected on a more popular basis. A further security should be provided by making the Examining Boards of such a character as to be beyond the suggestion of partiality, and with this view certain changes might be wisely adopted.

The management of the museum and of the library is also severely criticised. While recognising the value of his criticism, we scarcely think that Dr. Finlayson has fully considered the practical difficulties of the question.

The general tenor of Dr. Finlayson's paper leads us to believe that, were the changes which he advocates carried out, our Scottish Universities would be to a large extent transformed into examining boards, every student being allowed to follow his own bent in regard to the classes to be taken, the curriculum to be followed, and the place where his education was to be picked up. That is a position to which we are wholly opposed. By all means let us have more

practical classes and more tutorial classes ; let us, perhaps, diminish the number of lectures to be attended : but do not let us give up " the personal instruction of a living man," using that expression in the sense in which it was originally employed.

St. Mungo's College.—The first winter session of the College was formally brought to an end on Friday, the 28th March last, when Principal Blackie delivered a closing address to the students. There was a good attendance of students, and after the principal's address had been delivered, the lecturers awarded their prizes and certificates. The Governors and teachers have every reason to be satisfied at the manner in which the work of the Medical Faculty has been done.

Faculty of Physicians and Surgeons of Glasgow.—At the April sittings of the examiners the following medical practitioners, having passed the necessary examinations, were admitted diplomates in Public Health of the Faculty:—Dr. John Housley, Rockley, near Retford ; Dr. John M. Miller, Largs ; Dr. Anthony Milroy, Kilwinning ; Dr. Archd. M'Lean, Peebles ; Dr. James Shaw, Sheerness ; Dr. George W. Thomson, Haywood, Lanark.

Vinolia Soap.—We have received from Messrs. Blondeau & Cie specimens of their toilet soap, and having tried them, we can recommend the soap to the notice of our readers as an exceedingly pleasant article of toilet. The manufacturers claim that " Vinolia Soap is one of the purest toilet soaps in the market, being made from choice selected and refined fats. It is absolutely free from any excess of alkali, and contains an extremely large proportion of dry soap." The emollient properties of the Vinolia Soap are secured by the presence of an excess of fatty material.

Dr. Felix Wolff, of Hamburg, has taken charge of the well known sanatorium for consumption at Görbersdorf, in Silesia, founded and hitherto conducted by the late Dr. Brehmer. Dr. Wolff was for some length of time chief assistant to Professor Curschmann, and is considered to be well qualified for his new post. It is to be hoped that the sanatorium, which stands very high in Germany, both for the remarkable practical results achieved there, as also from a scientific point of view, will continue to flourish and increase under his guidance.

CORRESPONDENCE.

SIRS,—Will you allow me a few words, partly explanatory and partly expostulatory, with reference to the report in your April number of the paper I read at the Southern Medical Society on the above subject? On the billet it was entitled "a short paper"; and it was distinctly declared to be a statement of opinions resulting from the careful observa- tion of 42 cases of malignant disease treated by three methods—by abdominal sections, 4; by kolpo-hysterectomy, 3; and by my own method, which I have called excava- tion, 35.

It is somewhat inexplicable to me, the persistency with which my statements have been misrepresented. I cannot help coming to the conclusion that it must be ignorance. No one can hope to convert every person to his opinions; but at any rate he is fairly entitled to have his opinions and practice understood before they are condemned. It is equally a miscarriage of justice, whether judgment precedes trial or succeeds ignorance.

I prepared a paper for the Discussion on Cancer at the Pathological Society, Glasgow, 1886. At that time I had not a few cases from which to draw conclusions. But the gentlemen at the head of that discussion evidently did not think my observations worthy of their notice, for even the intimation of my desire to read was ignored. In spite of this terrible snub, I continued quietly working at the same subject; and the paper which I read at the British Medical Association last year was a further contribution, embracing a general and extended notice of the same and additional cases. To continue, my paper at the Southern Medical Society last month was on the same lines, with nearly a year's additional experience. No one could say, then, that I have not taken time, and bestowed care, and toil, and trouble, on this subject, before bringing it before the pro- fession. I have drawn, as I was entitled to do, general conclusions from my observations on these cases that I had operated on; and I have given my opinions with all due modesty, and certainly with the greatest care and deliberation. I have kept a careful record of all my cases for years; I have not spared myself in either time or money in the treatment

of these cases, for up till 1886 I had no hospital appointment
which could give me free and abundant material for study.
This I have done without seeking or looking for reward or
favour. But I find, to my mortification, that none of these
things is reckoned of any account. I see that half a moment's
consideration, and an off-hand sneer, are regarded sufficient
criticisms of surgical procedures which have taken me a long
time to elaborate.

I repeat again, that the operation which I call " excavation"
is practically a new one ; that it offers more than a reasonable
prospect of success, as I have tested in a great number of
cases ; and if, instead of sneering uselessly, those who do so
would only co-operate in time, they would be assisting in
a useful manner to alleviate the miseries of a large class
of their unfortunate fellow-creatures, perhaps even to the
elaboration of a cure for this so-called incurable disease.
This word I give to the wise, and for myself " meliora spero."
—Yours truly,

<div align="center">

J. STUART NAIRNE,
F.R.C.S. Ed., Exam., F.F.P.S. Glas.

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[We publish Dr. Nairne's letter, but think it right to state
that the report referred to was published as it was received
from the Editorial Secretary of the Society. Dr. Nairne's
remarks would have been more appropriately made at the
close of the discussion, when he had the opportunity of reply.
As the report appears in our issue, the remarks of the speakers
scarcely seem to warrant the strictures which Dr. Nairne
passes on them.—Eds.]

REVIEWS.

*Clinical Lectures and Essays on Diseases of the Nervous
    System.* By John Syer Bristowe, M.D. Lond., LL.D. Edin.,
    F.R.C.P., Senior Physician to St. Thomas's Hospital.
    London : Smith, Elder & Co. 1888.

Most of the lectures and essays in this volume have already
appeared, many of them in *Brain*, others in various medical
journals, and some in *St. Thomas's Hospital Reports.* A few
of them, as, for example, those on ophthalmoplegia externa and
on recurrent palpitation of extreme rapidity in persons other-
wise apparently healthy, have already been brought under the

notice of our readers in the form of abstracts; and the recollection of the pleasure which we had in condensing these papers for the *Journal* awakened in us a lively sense of satisfaction when we found that Dr. Bristowe had collected various of his papers on diseases of the nervous system into a volume. The greater part of that volume we have now read, and we can say of it that few recent works have given us so much satisfaction and instruction. The lectures are essentially clinical; they are based on cases which are recorded in detail, evidently with great accuracy, so that each reader may form for himself his own opinion as to their nature; and they are accompanied by remarks, which never take the form of *ex cathedra* statements, but which are the expression of the inferences which a skilled and thoughtful physician, of large experience, draws from the facts as recorded. Many of the cases related presented great difficulty in diagnosis, and the reader is, as it were, allowed to participate in the mental processes by which Dr. Bristowe arrived at his conclusions; the reader and he study the case together, carefully discussing all the difficulties, and forming definite conclusions only when the formation of a definite opinion is justified by the facts. Not only, however, is the method admirable, the style also is lucid, so that one reads with ease and pleasure.

The ground covered in this volume is of considerable extent, and it may be well to indicate the subjects treated. These are:—hysteria and its counterfeit presentments; the functional vomiting of hysteria; a peculiar form of choking, caused mainly by swallowing fluids; cases of functional nervous disorder, in which there were ophthalmoplegia externa, hemiplegia, hemianæsthesia, high temperature, epileptiform fits, &c.; case of aphemia of nine months' duration, in which speech was restored by the education of the organs of articulation; recurrent palpitation of extreme rapidity in persons otherwise apparently healthy; cases of Graves's disease; cases of recovery from symptoms pointing to the presence of progressive organic cerebral disease; speedy recovery from the effects of cerebral embolism; recovery from idiopathic cerebro-spinal meningitis; studies of a case of cerebral disease with thrombosis of the lateral sinuses; death from cerebral hæmorrhage in purpura; bi-lateral facial palsy; tubercular meningitis; tubercle of the cerebellum; masked cerebral tuberculosis; tumour of the corpus callosum; tumours at the third and fourth ventricles and at the aqueduct of Sylvius; softening of the pons and crura cerebri; myelitis; diphtheritic paralysis; the early recognition of

general paralysis ; and painful paraplegia. No one can scan this list without finding himself interested in some of the subjects discussed.

The first three chapters present a most valuable exposition of hysteria in sundry of its aspects. The cases quoted are extremely interesting and instructive, exemplifying the protean form of the malady. Dr. Bristowe has not attempted to define that disease, but at the close of his first chapter (The Cavendish Lecture, 1885), he gives in somewhat systematic form his views on it. "Hysteria may consist in excess, diminution, or modification of all or any of the nervous functions, whether of the brain, the ganglia at the base of the brain, the medulla, the cord, the sensory or motor nerves, or the sympathetic system. And hence, by specially implicating particular parts, it may, in its symptoms, resemble more or less accurately a large number of organic diseases of the nervous system, developed in the same parts. And hence, also, and on similar grounds, it may resemble, more or less accurately, many other recognised functional disorders of the nervous system, which are regarded as definite diseases, and have received distinctive names, if indeed, under such circumstances, it does not become identical with them." The presence of emotional symptoms, commonly recognised as so important in the diag- nosis, he very properly points out is common in other forms of disease besides the hysterical ; and he adds, what it would be well to bear in mind, that, when the hysterical phenomena are limited to parts remote from the brain, then there may be no emotional tendency at all. We cannot forbear quoting the last paragraph of this lecture : " In conclusion, I may venture to say, the more extensive my experience of nervous disease has become, the more I have learnt to recognise the following facts : that many grave nervous disorders which, from their mode of onset, their symptoms, and their progress, would seem to imply the presence of organic disease, present *post-mortem* no visible pathological change ; that many such disorders, progressive and threatening a fatal issue, are ultimately recovered from perfectly ; that limited or localised nervous phenomena, paralytic or spasmodic, anæsthetic or neuralgic, come and go without obvious cause ; and that functional nervous disorders capable of cure simulate the most serious as well as the most trivial cases of organic nervous disease. It may be admitted that emotional persons, and persons of marked hysterical tendencies, are more than others liable to suffer from the affections here referred to ; but some of the most remarkable examples I have met with have been in

patients who, apart from their particular malady, have presented no sign or symptom of the hysterical condition." The statements above made are amply justified by the cases he has recorded in the succeeding lectures, which we would most heartily commend to the perusal of our readers.

The Flowering Plant as Illustrating the First Principles of Botany. By J. R. AINSWORTH DAVIS, B.A. London: Griffin & Co. 1890.

THERE is at present a most unfortunate dearth of good elementary text-books of Botany; in fact none that exist can be recommended with entire confidence. Mr. Davis' little book on *The Flowering Plant* has merits which are often absent in others; but still it cannot command unqualified approval. It aims at illustrating the first principles of botany by means of common flowering plants, and is evidently intended for beginners. It appears to us that the opening chapters are the least satisfactory. Mr. Davis presents first to his readers a series of abstract ideas concerning the science of botany, the differences between animals and plants, and between living and non-living matter; such subjects would surely find their place better at the end of the book, when the readers have some knowledge of facts. Again, he enters upon the discussion of the cell and its constitution before he has given any sufficient description of the form or appearance of the organisms built up of such cells; he discusses assimilation, katabolism, reproduction, irritability before the organisms are described which show these phenomena. This appears to us an error of didactic method, which is especially unwelcome in an elementary book. But, in drawing attention to these points, the chief fault has been recognised; and as regards its general execution, the book gives a very fair picture of the flowering plant, and the form, structure, and function of its parts. The chapter on the Physiology of the Flower will be found to present a clear and succinct account of the curious phenomena leading to cross pollination, and will be read with interest.

As the end of the book approaches, the idea of the examination room, that bane of all true learning, begins to assert itself; it is to be traced in the appendix on Practical Work, and the complete dénouement is found in Appendix B, which consists of examination questions quoted from papers set at South Kensington and London University. In our opinion the purposes of the book would have been better served by the omission of this appendix.

Among the illustrations many old friends appear, good, bad, and indifferent; some, however, are new; *e. g.*, Fig. 1, representing a unicellular plant. One is disposed to ask, What plant? for its nature and affinities are not obvious. Surely it would be better, especially at the outset, to hold the confidence of readers by a representation of some actual fact of nature, rather than to exercise their faith in the author by presenting to them, as the first figure, something which never lived except in the author's brain. But notwithstanding the points above noticed, the book is in many respects a sound and useful one, and supplies satisfactorily for the elementary student a general description of the flowering plant.

Lehrbuch der Physikalischen Untersuchungsmethoden Innerer Krankheiten. Von Dr. Hermann Eichhorst, o. ö Professor der speziellen Pathologie und Therapie und Direktor der Medizinischen Universitätsklinik in Zürich. Dritte Auflage. Berlin: Verlag von Friedrich Wreden. 1889.

The third edition of Eichhorst's work on Physical Diagnosis has followed the second at an interval of only three years. Nothing could more clearly show the appreciation with which the work has been received. We have previously expressed our opinion of its great value, so that it is unnecessary for us now to do more than state that this edition bears evidence of careful revision. The past three years have not been so fruitful in new methods of physical examination as to lead one to expect much new matter. Attention is directed to the endoscope, and its application to the examination of various cavities, but no illustrations are given. Space has not yet been found for any description of the various physical conditions of the ear and of the eye, while the throat, as before, receives brief treatment. In the paragraphs dealing with respiratory murmur we find no mention made of the results obtained in cases of extirpation of the larynx; surely this must be an overlook.

The Student's Surgery: A Multum in Parvo. By Frederick James Gant, F.R.C.S., Senior Surgeon to the Royal Free Hospital. London: Baillière, Tindall & Cox. 1890.

Admirers of Mr. Gant's larger work will welcome this abridgement. Amidst the many text-books on surgery now extant for the use of students it is hardly possible to say that the

present supplies a want; nevertheless, it may be said to rank among the best of its kind. The author wisely enjoins the student to look beyond the scope of the present volume, and not to consider its contents as sufficient for giving anything approaching a complete and adequate knowledge of the science of surgery. The book is an epitome of the author's own part in his *Science and Practice of Surgery;* that is to say, the articles contributed by special authorities have not been abbreviated for the present work, so that for all matters relating to the eye, ear, teeth, skin, female genital organs, and orthopædics, the student must consult other books. The book is somewhat closely written, and being but sparsely provided with illustrations, will prove a little tedious to read. However, it has other compensations, and these possibly outweigh what are really only slight defects. The arrangement of the subjects and their method of treatment are all such as to appeal in the best way to the student's interest. Even to the student the author's larger work is to be commended; but little fault, however, will be found with him who thoroughly masters the contents of the smaller work. We would wish the present abridged treatise the same success that its larger predecessor has enjoyed.

The American Armamentarium Chirurgicum. By GEORGE TIEMANN & CO. New York. 1889.

THIS is a catalogue of surgical instruments, and we may safely say one of the largest of its kind that has emanated from any instrument maker. But Messrs. Tiemann & Co. is probably one of the largest firms in existence, and so it is only natural to suppose their catalogue also should be one of the largest. It is large, however, for other reasons than the mere catalogueing of instruments. A novelty is introduced in the way of appending to certain instruments a full description of their use. The book might be said to approach more to the nature of an operative surgery than an instrument maker's catalogue. Whether the expense connected with drawing up this descriptive part of the work is really compensated for by the actual practical value supposed to be thereby derived is very doubtful. A surgeon usually buys an instrument for some particular purpose which he requires; and it would be the exception rather than the rule that he would acquire that which he would need to read the description of in order to learn its proper use. However, whether or not this new innovation is of any additional value, the book possesses other merits which must

still rank the catalogue far and above any like book in this country. The assortment of instruments is very complete; the woodcuts are excellent; the paper, print, and binding are of the best; and the book itself will prove a useful and ornamental adjunct to any library.

MEETINGS OF SOCIETIES.

MEDICO-CHIRURGICAL SOCIETY OF GLASGOW.

Session 1889-90.

Meeting IX.—7th February, 1890.

The President, Dr. Wm. Macewen, *in the Chair.*

I.—SALIVARY CALCULUS.

By Dr. Beatson.

This specimen was of an elongated oval shape, measuring $\frac{3}{4}$ of an inch in length and $\frac{3}{16}$ths of an inch in breadth. Its colour was light yellow, and it weighed six grains. It was removed from the floor of the mouth of a female patient, aged 34 years, who had noticed its presence for about eighteen months in the form of a small hard lump underneath the tongue. As it was increasing in size, and had given rise to the fear of its being a commencing cancer, she decided to have it removed.

II.—THE FOLLOWING SPECIMENS WERE EXHIBITED.

By Dr. Fleming.

1. An exostosis removed from femur. The cartilage covering the free surface of the tumour appeared to be undergoing ulceration.

2. Ulcerating carcinoma of breast.

By Dr. Knox.

1. Multilocular cyst of ovary removed from a patient aged 63.

2. Unilocular cyst of broad ligament from patient aged 25 years.

3. Specimen of rheumatoid arthritis of humerus of $3\frac{1}{2}$ years' duration, removed by excision.

4. Case of osteomyelitis of femur, with secondary arthritis of hip; amputation at hip-joint.

BY DR. BEATSON.

A fibroma of ovary.

III.—SARCOMA OF TESTICLE (UNDESCENDED).

BY DR. BEATSON.

Dr. Beatson showed a sarcoma of testicle (undescended) which had been removed from the right groin of a man aged 40 years.

The history of the case was that patient's health had been indifferent for some considerable period, the symptoms of the illness being chiefly of a rheumatic nature. In March of 1889 he noticed that a small movable lump, which had always been in his right groin, commenced to swell, and by August had attained such dimensions that he sought advice at one of our infirmaries, where the tumour was aspirated, and he was advised to leave it alone.

When seen in October by Dr. Beatson, in consultation with patient's medical man, the right groin was found to be occupied by a large tumour measuring 15 inches in circumference at its base, and 8 inches in its greatest breadth. It was smooth on the surface, and had a very elastic feel, but gave no impulse on coughing, and had no expansile thrill. The tissues over it were very thin, and the tumour was freely movable. Examination of the scrotum showed a want of development of its right half and the absence of the right testicle. This fact, and the history of the case, pointed to the growth being an undescended testicle that had taken on a malignant action. As patient was otherwise free from organic disease, though very much crippled with rheumatism, and as the tumour seemed extra-peritoneal, it was decided that the proper course to pursue was to remove it. This was done on 16th November, 1889, and was accomplished without any difficulty, the tumour shelling out easily from the surrounding tissues. The after progress of the case was in every way satisfactory, and patient made a good recovery.

The following report on the tumour was kindly furnished by Dr. Coats:—

"*Sarcoma of the Testicle.*—It is a bulky solid tumour, measuring $4\frac{1}{2}$ inches by 4 inches by $2\frac{1}{2}$ inches. It has a soft

feeling, almost fluctuant in parts, and at the operation a quantity of bloody fluid is said to have escaped. The tumour before this was evidently larger. The mass is surrounded by a distinct capsule, which is interrupted only at one rough surface, where the pedicle is stated to have existed.

" The tissue is of the consistence and of very much the same colour. The mass is somewhat lobulated. Near the pedicle is some tissue somewhat resembling testicle, but it requires examination after hardening.

" Under the microscope, in the fresh state, the tissue presents a coarse cellular stroma, from the meshes of which the contents readily pass out. These contents are large epithelial cells.

" *Diagnosis.*—On examining after hardening the diagnosis of the tumour is difficult. There is a coarse meshwork of fibres, but no proper stroma, separating groups of cells into well-defined spaces. On the other hand, although the cells are so close that there is mostly no inter-cellular substance visible; yet in thin and broken parts fine stiff fibres are frequently visible between the cells. The cells are large and like epithelial cells.

" Dr. Coats therefore concludes that it is a sarcoma and not a cancer."

In his remarks on the case, Dr. Beatson pointed out that of the varieties of misplaced testicle it was an illustration of the most common, and that the diagnosis rested on the absence of the right testicle with a corresponding want of development of the right half of the scrotum, this condition being further accompanied by the history of a movable lump in the groin. Stress, too, was laid on the fact that the case brings out what is probably the most frequent complication of a misplaced testicle, even more so than inflammation—namely, the tendency for such an organ to become malignant when situated in the inguinal canal. The variety of new growth developed is never certain, and, as in this case, it may be of a mixed kind; but the existence of this tendency makes it clear that such a testicle may be a source of peril, and that no opportunity should be lost of removing it.

Dr. Knox asked if Dr. Beatson meant to say that non-descent of the testicle was a common cause of malignant disease in the testicle ? Dr. Knox had seen and operated on three cases of undescended testicle, complicated with hernia— in one case the patient's age was 57—and in all these cases the testicle was merely atrophied. He had not seen a case of malignant disease in the undescended testis.

IV.—A CASE OF LOCALISATION OF LIMITED LESION OF SPINAL
CORD FROM PHYSIOLOGICAL DATA.

By Dr. Macewen.

H. R., aged 60, labourer, was admitted to Ward XXIX,
Glasgow Royal Infirmary, on 31st October, 1889, suffering
from an injury to the cervical region of the cord.

He had fallen a distance of 15 feet from a hayrick. He
cannot describe the exact position he was in when he fell, and
no one saw him fall, but the bystanders found him on the
ground with his face downwards, and they considered him
unconscious. He considered that he was unconscious for
about half a minute, and afterwards he found himself lying
on his face quite unable to move.

When admitted, he complained of pain in the neck, in the
region of the fourth, fifth, and sixth cervical vertebræ, and Dr.
Johnston (house surgeon) believed he detected something like
osseous crepitation, such as might be occasioned by separation
of one of the cervical spines.

On admission, patient, who was quite conscious, lay on his
back with both arms abducted to nearly a right angle, and the
forearms fully flexed on the arms, the hands lying on the
chest. The wrist was flexed, as were the fingers, with the
exception of the index, which was partially extended. The
little finger was most flexed, the others less so. The position
of the fingers may be seen in the photographs. The right
index finger, though extended, was found to be anchylosed in
that position, but the left was normal in this respect. He had
absolutely no grasp. He could not extend his arms, but when
passively extended he could fully flex the forearm by the
biceps and brachialis anticus; occasionally this flexion was
involuntary.

He could raise the upper arm easily by the shoulder muscles,
the deltoid, trapezius, supra-spinatus muscles, but, besides that,
there was a distinct adduction in his attempts to raise the
arm, which seemed to be occasioned by the coraco-brachialis,
and possibly the pectorals.

The muscles of the shoulder joint were in very good form.
The supra and infra-spinati, the deltoid, biceps, and brachialis
anticus, contracting when he wished to raise the arm, though
all were feeble in their action. He could not supinate his
forearm; several of the muscles in the upper arm, but especially
the biceps, contracted on touch, and the latter also contracted
automatically when the forearm was extended.

The breathing was distinctly diaphragmatic, the chest was extended and fixed, and the intercostal muscles were inactive. The ribs were fixed, and the intercostal tissues were blown out, and sucked in, very much like pieces of inert membrane on each expiration and inspiration.

In the lower limbs the power was good, as tested while patient lay in bed. He could lift his legs right up from the bed and flex and extend them with ease.

Sensations.—The sensation of the arms was slightly dulled, and in the forearm and hand the dulness was increased from the outer toward the inner side, and on the ulnar border of the right it was entirely wanting, while the sensation was present to a slight extent in the left.

The cutaneous reflexes were much impaired, with the exception of the plantar, which was normal. Cremasteric reflex absent, as were likewise the patellar reflex and ankle clonus. Bladder emptied itself when full, but the urine did not dribble away. He knew when the urine was flowing, but could not restrain it. The motions were also passed in bed.

Eyes.—The palpebral clefts were narrow, the pupils were in a state of stabile myosis. There was paralysis to light and skin reflexes, but there was slight contraction to accommo- dation. On dilation of the pupils by homatropine the fundi were normal, possibly a little congested. There were fibrillar twitchings all over the body, especially in the legs.

For the first twelve days, and especially during the last of them, there were considerable changes which slowly occurred. First the power of the shoulder muscles became greatly im- paired, especially on the right side, so that he could not raise the right arm, and the power of doing so on the left was greatly lessened. The muscles of the upper arm had become rigid, markedly so on the right. The movements of the left leg were impaired, and were not under perfect control. Mean- time he complained of great pain in the arms, especially in the elbows. This pain was not present at first, when the arms were not touched, though he complained of a "stiffness" and uneasy sensation when they were forcibly extended.

There was no observed vaso-motor disturbance; no unila- teral flushings or sweatings.

The temperature up to 14th November was about normal (98°-98·6° F.) From 14th November the rectal temperature has been subnormal, running down to 95·6° F., and on two occasions, on the 27th and 28th November, the mercury would not rise to the level of the register which commences at 95°. These latter observations were several times repeated, and

with two or three thermometers to prevent mistakes. Several times this depression of temperature continued for at least some hours.

From the 11th to 14th November the temperature was taken every two hours in both ears. Although there was a difference of a few points, never reaching to a degree, it was not always lower on one side than the other. On the first day it was a little higher on the right side than the left; during the subsequent days it was a little lower on the right side than the left.

13th December.—Since the last note there has been a gradual improvement. The deficiency in power of the left leg lasted only a few days, and the power of the lower limbs, as far as they can be tested in bed, is good.

The power of the upper arms is still very deficient, but is not so limited as it was. He begins to move the fingers of both hands. His temperature has slightly improved, and the intercostals now take part in breathing, which is both thoracic and abdominal.

Eyes.—Nothing abnormal detected in either fundus except a posterior staphyloma.

State on dismissal, 18th January, 1890.—The patient left the Infirmary on 18th January, 1890, 79 days after admission.

About the eighth week he was able to rise out of bed, and for three weeks before leaving he was able to walk round the ward. His left hand and arm he could raise to the back of his head. His clasp was fair, but the elbow could not be extended beyond a right angle, owing to the rigidity of biceps and flexor muscles. With his right arm, which was also flexed at a right angle, he had much less movement than in the left. His grasp was almost absent in the right. He could oppose his thumb very slightly, and move his distal phalanges slightly. The only movement in the rest of the arm was diminished adduction and abduction of the elbow.

There was considerable atrophy of some of the muscles of the arms. Those most affected were the extensors of the forearm and hand with the interossei.

The breathing was both thoracic and abdominal. There was no rigidity or contraction about the neck. His appetite was excellent and he was increasing in weight.

Some weeks before leaving his bladder and rectum were restored in function.

This is a case of limited lesion of the cervical region of the cord concentrated at the lower part of the cervical enlargement. The diaphragmatic breathing, which was vigorous and

well sustained throughout, while the action of the intercostals was in abeyance, showed that the lesion was under the fourth cervical, and above the second dorsal.

The group of muscles involved in Erb's paralysis of the upper arm was here affected with paresis. These were the supra- and infra- spinati, the deltoid, biceps, brachialis anticus, and the supinators. Paralysis of this group Erb attributes to a lesion of the sixth cervical, though Ferrier and Yeo deduce from their experiments that the fifth is likewise involved.

This group of muscles was in this case affected only to paresis, and it was evident that the chief lesion was below this point, as the intrinsic muscles of the forearm, wrist, and hand were absolutely paralysed.

A destructive lesion or severe pressure upon the region of the seventh and eighth cervical would cause paralysis of the extensors and flexors of the wrist, while if the region of the first dorsal was also implicated the interossii and other intrinsic muscles of the hand would be likewise involved This is exactly what was present in this case. The chief force of the injury had expended itself on the region of the seventh and eighth cervical and first dorsal.

The sensory phenomena supported the deduction drawn from the motor. A lesion affecting all the brachial plexus, below the fifth cervical, would cause anæsthesia of the upper limb, except on the outer side of the arm and forearm and the radial border of the thumb, part of the region supplied by the musculo-spiral nerve.

In this case the defect in sensation was most pronounced over the ulnar border of arm and hand, while in the little finger sensation was in abeyance. This would again point to the eighth cervical and first dorsal, as they supply the little finger and ulnar border of arm and forearm. It was also interesting to observe that the legs were free, while the intercostals were involved, though not by a destructive lesion, as they ultimately recovered their function.

The lesion was one which principally affected the anterior direct columns, and did not implicate the lateral crossed columns. It could have been produced by injury of the anterior part of the cord against the bodies of the vertebræ or the intervertebral discs, or probably by a hæmatomyelia. The region where hæmatomyelia most frequently occurs is that of the fourth, fifth, and sixth cervical vertebræ. Here it was a little lower, the seventh cervical and first dorsal, the fourth cervical being free. When hæmatomyelia is present it tends to affect the anterior cornua and the central canal.

The case was looked on as one which probably was a bruis-
ing of the cord from over extension of the cervical vertebræ,
accompanied by hæmatomyelia. A crush at this region from
displaced vertebræ would in all likelihood have resulted in
more general spinal involvement, such as paralysis of the
nerves of lower limbs.

Then, again, the lesion was unequal on the two sides, as the
paralysis of right arm was more severe than the other, while
it was clear that the lesion on the right side was likewise
destructive, as atrophic paralysis is now marked in the right
hand and arm. It is possible that the last two cervical and
the first dorsal nerves may have had their roots especially
injured, both sides being here implicated at the same level,
though not to the same extent.

The posture, as is in the photographs, is typical of cord
lesion about this region.

Dr. Workman considered that the account of the case given
by Dr. Macewen pointed rather to a lesion of the nerve roots at
their exit from the canal than to a lesion of the cord itself, at
least that the lesion to the cord was slight. He asked if the
muscles had been tested for the reaction of degeneration, and
referred to a case he had seen as a student, of fracture of the
fourth and fifth cervical vertebræ with complete paralysis
of the limbs, both arms and legs, and paralysis of the
intercostals.

Dr. Robertson said that Dr. Macewen's case was in
accordance with the results of the experiments of Ferrier and
Yeo on the functions of the cervical and upper dorsal nerves.
He had been struck with the statement that the lesion had
extended to the lower cervical and upper dorsal region, with
the wasting of the interossei muscles; for the experiments of
these observers showed that injury of the first dorsal nerves
produced atrophy of these muscles. He thought, however,
that the cord had suffered to some extent, though not greatly,
and that this was supported, among other symptoms, by the
paralysis of the bladder and bowels. The character of their
paralysis showed that the defect in these organs was the
interruption of the cerebral controlling power. The minute
contraction of the pupils might be explained by an injury to
the communicating fibres between the cord and sympathetic,
or to an injury to these fibres in the cord.

Mr. Henry E. Clark regarded Dr. Macewen's case as an
especially interesting one, in respect of its being marked by
such considerable disturbance of function in the upper
extremities and almost none in the lower. The ordinary cases

of fracture dislocation of the lower cervical spine were marked by more or less complete paralysis of arms and legs alike, and it was a novel feature to find this patient able so freely to move his legs. He dissented from Dr. Workman's view that the lesion might be one entirely or mainly confined to the nerves, for the absence of reflexes, the implication of the intercostal nerve supply, and of that to the bladder and rectum seemed to show that the cord was distinctly involved. As to the mechanism of the production of the lesion, he thought it probable that the head had been doubled up upon the chest by a fall on the head, and the cord had thus been stretched across the back of the bodies of the vertebræ. In such a stretching the strain would be greatest at the junction of the movable cervical spine with the more fixed dorsal spine, and it was precisely here that the lesion was located, as evidenced by the distribution of the motor and sensory paralysis. There were certain features in the case which were not easy to explain, such for instance as the implication of the intercostal nerves and those to the bladder and rectum as a primary lesion and not as the result of subsequent inflammation of the cord, and the absence of the reflexes in the lower limb.

Dr. Coats was greatly interested in the problem offered by this case, especially by the apparent anomalies, which might possibly contain the solution of some points in the physiology of the cord. The affection both of motion and sensation proves that both the anterior and posterior parts of the cord had been injured, whilst the lateral columns containing the pyramidal tracts had escaped, as proved by the absence of paralysis in the legs. An injury such as suggested by Dr. Macewen, in which the column was violently bent, might seriously narrow the cord and tell on the more central parts, whilst the lateral parts were pushed out and so escaped. The paralysis of bladder and rectum and of the intercostals was the anomalous part of the case. Dr. Coats suggested that perhaps the motor fibres going to these parts might be in the anterior or direct pyramidal tract, and so were affected along with the parts of the cord near the middle line. Possibly there may be facts contradicting this view, but he made the suggestion.

Dr. Macewen, in reply, said he could scarcely agree with the opinion that the lesion here was confined to the roots of the cervical nerves, and that the cord was not injured. Surely diaphragmatic respiration, stabile myosis, narrowing of the palbebral clefts, subnormal temperature, implication of bladder and rectum, besides the implication of both arms (though not to the same extent on the left as on the right), were sufficient

evidence of cord involvement. That there might be in addition to the cord lesion one of the last cervical and first dorsal nerves was quite possible, and on the right side such a lesion might have accounted for the atrophy of the intrinsic muscles of the arm, especially the interossei. Trephining was not resorted to, because the diagnosis was that of overstretching of the cord, with consequent bruising of a portion of it, especially the anterior part followed by hæmatomyelia. There was, there- fore, no reason for trephining, no osseous particle to elevate, and one could with difficulty take away blood from the interior and the anterior part of the cord. Besides, in the cervical region, especially in the vicinity of the fifth and sixth cervical centres, one would not be disposed to expose the cord unless for an obvious reason, especially when the intercostals were paralysed, as it was possible, from slight ascending myelitis, that the phrenic might become involved subsequently and lead to death. Had there been indications of depressed bone, and the patient's symptoms corresponded thereto, operation would have been justified, provided his state did not indicate absolute crushing of the cord at the spot. There is a difficulty in diagnosis in connection with the escape of the lower limbs, so far as their motor power was concerned, while the intercostals were involved. If one accepted the view that the anterior or so- called direct tracts are chiefly related to the innervation of the arms, then an explanation might be forthcoming. That the anterior pyramidal tracts are related to the innervation of the arms is believed in as a probability by some who closely studied the subject. From sections made at various levels of the cord it is seen that the anterior pyramidal tracts lessen from above downwards, so that under ordinary circumstances, when the bulk of these tracts is about the usual size, they disappear about the middle of the dorsal region; when they are small in the upper cervical region, they may disappear about the middle or more probably about the end of the cervical enlargement; and when very bulky in the upper cervical they may continue down to the lumbar enlargement. The innervation of the arm is located almost exclusively in the opposite hemisphere of the brain. These tracts decussate, not in the medulla, but in the cord itself, probably passing through the anterior commissure to the grey matter on the opposite side, while the lateral columns, however small they may be in the upper part of the cervical, always continue down to the lumbar enlargement. Were we accepting this probable explanation, believing that the anterior columns (which are crossed in the cord) contributed mainly to the innervation of

the arms, then we might further ask whether the intercostals were not also innervated from the anterior columns? Were this answered in the affirmative, the peculiarity noticed here (and this case is by no means unique in respect of the intercostals being implicated without involvement of the legs) the lateral columns not being involved in the lesion would be explained.

ABSTRACTS FROM CURRENT MEDICAL LITERATURE.

SURGERY.

By HENRY RUTHERFURD, M.B.

Cocain used Hypodermically.—Link (*Wiener Med. Wochenschr*, 1888, No. 51) has used hypodermic injections of cocain extensively in minor surgical operations. He believes that a one per cent solution is sufficiently strong, if enough of it is used, and advises that it should be introduced into the subcutaneous cellular tissue, not, as some have recommended, into the skin itself. It should not be injected within an inflamed area.

Commenting upon the above article, Hans Schmid (*Centralbl. f. Chir.*, 8th June, 1889) confirms the advice given, and says that when the area of inflammation is small, one or more injections, in healthy surrounding parts, will produce the desired effect. To avert any risk of cocain poisoning, which he, however, has not seen himself, he advises that an Esmarch's tourniquet be applied before the injection is made, to prevent absorption into the circulation. Absorption, after the removal of the tourniquet, is not likely to happen to any great extent, because it is probable that most of the injected fluid will be washed out of the tissues by bleeding during the operation.—D. M‘P.

Reclus and Wall on Cocain in Current Surgery (*Revue de Chir.*, 1889, No. 2; translation of an article by Sprengel in *Centralbl. f. Chir.*, 5th October, 1889).—Widely as cocain is now used in minor surgery, these authors believe that it has not yet found its proper place as a local anæsthetic. When one learns from this article that they have used it as an anæsthetic with advantage to themselves and to their patients, not only in minor operations, but also in major—such as castration, radical operations for hydrocele and hernia, extirpation of tumours of considerable size, exarticulation of fingers, washing out joints, &c., one must subscribe to that opinion. The explanation of their good results lies partly in the art of using the drug, and partly, perhaps still more, in careful dosage.

Concerning the first point, the main thing, not hitherto unknown, but not sufficiently attended to, is to make sure that the injected fluid comes into contact with the really sensitive part, which is the skin. To attain this, the injection should not be made into the subcutaneous cellular tissue, but into the cutis itself, which can, in most parts of the body, be easily distinguished by the greater feeling of resistance. When the injection is made slowly, considerable areas of skin can be made insensitive with a comparatively small quantity of the fluid, without causing the patient much discomfort. It is well, in placing the punctures, to bear in mind the form and extent of incisions determined upon.

Very often this method is sufficient, but it may be necessary, in deeper operations, such as the removal of tumours, to inject deeper into the cellular tissue, so as to surround the tumour, &c., with a "cocain atmosphere."

In dealing with inflamed skin the authors have had similar good results. But, here, to avoid distressing the patient by suddenly increasing the tension in the tissues, already abnormal, the injection must be made very slowly, and the puncture should be made in healthy skin if possible, and the needle gradually pushed towards and into the diseased part.

If it is desired to act upon a serous membrane, for instance in the treatment of hydrocele, it may be injected into the sac half an hour before puncturing or after emptying the sac, and before injecting the tincture of iodine. For the operation of washing out joints, the skin and subcutaneous tissue may be first anæsthetised, and then, by pushing the needle deeper, the articular surface.

Another use of cocain is to make the rectum insensible to pain during the operation of dilating the sphincter. They inject half a syringeful at six equidistant points round the orifice, inserting the needle close to the edge of the mucous membrane, deep enough to be sure of reaching above the muscle.

Strange to say, the authors got no results with the injection in the extraction of ingrown nails. For tedious "atypical" operations, such as the extirpation of glands, &c., cocain is of no use.

Regarding doses, they vary very much in different cases and patients. Generally, a 5 per cent or somewhat weaker solution was used, and up to five Pravaz syringefuls were used. Such doses, however, were seldom required, for from three to four syringefuls was generally sufficient to produce full analgesia.

The authors, having seen no evil results from a liberal use of the drug, naturally believe that the risks of its use are slight.

It is necessary to be careful about making injections into very vascular parts, to guard against injecting directly into a vein, and to proceed cautiously in cases where the injection is not to be followed by a bloody operation, as in the case of stretching sphincters, in which cases the whole of the drug injection remains in the tissues to be absorbed. Further, the drug is dangerous in very cachectic persons, and in those suffering from renal affections. That now and then a case of cocain-idiosyncrasy may be met with cannot be denied ; but the authors are certainly right in holding that cocain does not differ in this respect from many other drugs which are in daily general use.—D. M'P.

Contagiousness of Vulvo-Vaginitis in Children.—" Ollivier sends a short communication (*Bull. de l'Acad. de Med.*, 1888, No. 43), as a contribution towards settling a still disputed point, whether vulvo-vaginitis in children is contagious or not.

" Into a ward of an hospital which he visits, in which there were none but children, and these all free from this affection, two girls suffering from it were admitted. By the end of three weeks no fewer than fifteen of the others were similarly affected.

" Investigation showed that there was ample opportunity for communication of the disease from one child to another, for the nurse did not pay the attention to cleanliness that was expected of her. It was found, for instance, that she not unfrequently washed healthy children with the same sponge as she used for the diseased, that chamber-pots were not always cleaned after each using, &c. When the defects were put right, the sponges replaced by swabs of lint, and the diseased children excluded from closets used by healthy ones, the disease spread no further.

" While this observation is not conclusive evidence, it leaves but little doubt that vulvo-vaginitis of children is contagious, or at least that there is a contagious form of the disease." Sprengel (*Centralbl. f. Chir.*, 22nd June, 1889.)—D. M'P.

Vulvo-Vaginitis in Children. By F. Spaeth (*Münchener Med. Wochenschr.*, 1889, No. 22).—This communication describes 21 cases of vaginal

discharge, ages varying from 3 to 11, observed in Prochownick's practice in Hamburg. In 14 cases Neisser's gonococcus was unmistakably recognised in the secretion from the vulva and urethra; in the others various bacilli, strepto- and staphylococci, were found. In the latter cases the urethra was not implicated in the inflammatory process, while in all the former it was diseased as well as the vulva and vagina. Of the specific cases, occurring mostly in children of the lower classes, the attributed causes were—11 times blenorrhœa in the mother, twice blenorrhœa in the father, once rape, and once probably infection in hospital.

Treatment consisted in irrigation of the vagina with warm sublimate solution, and the introduction of iodoform or thallin powder or anthophores into the vagina and urethra, and resulted, in 8 cases, in cure (average duration of treatment, $3\frac{1}{2}$ months); 5 times in improvement. Of the 7 cases in which gonococci were not found, and in which there was no urethritis, 6 were cured.

Judging from these cases, the author believes all cases of vulvo-vaginitis with implication of the urethra to be true gonorrhœa, and that many cases supposed to be sequelæ of acute infective diseases are really due to the gonococcus.—(*Centralblatt f. Chir.*, 7th September, 1889.)—D. M'P.

Acute Suppurative Peritonitis Following Vulvo-Vaginal Catarrh.—At the 1889 meeting of the Pediatric Society, Dr. Francis Huber, New York, described the case of a patient, 7 years of age, who had vulvo-vaginal discharge, but did not seem to be very sick. She was suddenly seized with collapse with subnormal temperature. This was followed by pain in the right iliac fossa and vomiting. It was thought that there had been a rupture of the vermiform appendix. The next day the patient seemed better. The pain increased, the pulse became more rapid, and the temperature went up to $100°$ F. The patient was seen by other gentlemen, who agreed with the diagnosis. Operation was determined on, and performed on 4th June. Considerable sero-purulent fluid was found. The appendix, however, was normal. The right Fallopian tube was inflamed and thickened, and it had evidently formed the channel by which the infecting substance had gained access to the peritoneal cavity. The abdomen was washed out, and an antiseptic dressing applied. Death occurred 20 hours later from heart failure. The vulvo-vaginal catarrh was supposed to be of specific origin.—(*Boston Med. and Surg. Journal*, 24th October, 1889.)—D. M'P.

Operative Treatment of Flat-foot.—Trendelenburg points out similarity of deformity and symptoms in the spontaneously developing cases, and in those which result from badly united fractures of leg bones near the ankle. He suggests the application of the same treatment as is found satisfactory in the latter class of case—namely, transverse osteotomy of both bones just above the ankle. The foot is then carried inwards till the axis of the leg passes through the centre of its plantar surface, the abnormal condition of pronation is at the same time overcome (tarso metatarsal movements), and the foot fixed in plaster of Paris. Trendelenburg has operated on four cases by this method with excellent results, the aching of the feet disappearing, and the arch of the instep being restored.—(*Arch. f. Klin. Chir.*, Bd. 39, Hft. iv.)

Extirpation of the Vesiculæ Seminales for Tubercular Disease.—Ullmann recommends this operation—(1) In primary tuberculosis of a testicle or epididymis, at a time when there are as yet no suspicious symptoms connected with the seminal vesicle of the sound side; (2) in primary tuberculosis of the seminal vesicles. In a case operated on by him, while all that could be made out before operation was tuberculosis of the right epididymis and hard swelling of the corresponding seminal vesicle, on exposing the vesiculæ seminales, the left also was found infiltrated. [It may be presumed, however, that had the left vesicle not appeared to be affected when it was laid bare, that it would not have been removed.]

Operation.—Semi-circular incision, concavely backwards, in front of anus,

the finger of an assistant in rectum as guide ; splitting of the perineal body ; division of the pubic band of the levator ani, upon which some bleeding occurred. The prostate was now in view. The rectum was next separated further, and with a sound in the bladder, the posterior inferior wall of that organ, with vasa deferentia and vesiculæ seminales, brought well forward. These, with the exception of the left vas deferens, which seemed unaffected, were carefully dissected out and removed. Sharp bleeding occurred the same evening, requiring reopening of the wound and plugging.—(*Centralblatt für Chir.*, No. 8, 1890.)

Fractures of the Neck of the Femur—Treatment by Immediate Reduction and Permanent Fixation.—Senn sums up the results of his experimental and clinical observations on this subject as follows :—

1. From a scientific, prognostic, and practical standpoint it is not necessary to make a distinction between intra- and extra-capsular fractures of the neck of the femur.

2. An impacted fracture of the neck of the femur will unite by bony union, provided the impaction is not disturbed, and is maintained by appropriate treatment for a sufficient length of time for the fragments to become united by callus.

3. Impacted fractures of the neck of the femur should be treated by a fixation dressing consisting of a plaster of Paris case, including the fractured limb, the pelvis, and the opposite limb as far as the knee, in which a splint should be incorporated by which lateral pressure can be secured in the direction of the axis of the broken femoral neck. [The actual pressure is made by a screw-pin and pad, as in Lister's abdominal tourniquet.]

4. Unimpacted fractures of the neck of the femur, both intra- and extra-capsular, should be treated by immediate reduction and permanent fixation, so as to place the fragments in the same favourable condition during the process of repair, as in impacted fractures.

5. Reduction is effected most readily by auto-extension, and traction upon the fractured limb, with the patient in the erect position, resting his weight upon the sound limb.

6. The fixation dressing should not be removed, and the lateral pressure should not be discontinued for from ten to twelve weeks, the shortest space of time required for bony union to take place.

7. Patients who have sustained a fracture of the neck of the femur should not be allowed to use the fractured limb earlier than four to six months after the accident, for fear of establishing a pseudo-arthrosis at the seat of fracture.

8. The functional result is greatly improved by passive motion, massage, and the use of the Faradic current.—(*Journal of the American Medical Association*, 3rd August, 1889.)

Eight cases are narrated in which this treatment was applied. Out of six cases in which there was no impaction, five were, at the end of a year, able to get about and attend to their ordinary occupation. The sixth could not be traced. The other two, which were diagnosed as impacted intra-capsular fractures, also yielded admirable results ; but it must be pointed out that the signs in the latter class of cases present some ambiguity in respect to their distinction from simple contusions. The part of this treatment which seems to have most in its favour is the fixation by means of plaster of Paris, enabling the patient to turn in bed, or to be moved without incurring pain or interfering with the process of repair. As to the possibility of making complete reduction, and the chances of union, it is to be pointed out that the detached head can hardly be relied upon to present invariably in the normal direction (as in the osteotomy experiments on animals); that its atrophy, more or less, can hardly fail to ensue in those cases where there is already atrophy of the round ligament, and that the continued pressure over the trochanter (by the screw-pin) involves risks from sloughing, not to speak of pain, which seem more certain than the benefits to be obtained from it.

Tuberculosis of Bones and Joints.—H. A. Thomson (*Laboratory Reports, Royal Coll. Phys., Ed.*, vol. ii), acknowledging great service done by König in directing attention to the bony lesion in tubercular disease of joints, endeavours to show that the common lesion is a combined and simultaneous affection of bone and of synovial membrane.

The lesions resulting from the entrance of tubercle bacilli into bony tissue vary as widely as in other tissues. Those of practical moment in relation to joint disease are—

1. The chronic circumscribed tubercular focus.
2. The diffuse caseous infiltrating tubercle.
3. The tuberculous necrosis of bone.

As to the first two of these, it is pointed out how the types vary and tend to approach one another according to the activity of the process. The frequent complication of No. 2 with extensory necrosis is referred to, and the peculiarities of tuberculous necrosis proper (sclerosis, non-separation, infarction character) are described without the author's being able to offer any very definite conclusions as to the explanation of these.

The normal blood supply to any long bone is conveyed to its interior by two sets of vessels (1), the medullary artery piercing the shaft to ramify in the interior of the medullary canal, and (2), a variable number of smaller arteries, the so-called articular arteries which supply the epiphyses and the synovial membrane connected therewith.

Injections through the medullary artery would seem to be exceptional; when they do occur they are of a gross nature, and are represented either by large sequestra or by diffuse tubercular osteomyelitis. While the epiphysial plate persists such sequestra are situated on its shaft aspect as a rule; when it has disappeared, the sequestrum is contained in the epiphysis itself; in either case the lesion corresponds to the terminal distribution of the medullary artery.

Infection of the epiphyses through the articular arteries is the more common condition, and explains the prevalence of "bone arthritis" in tubercle over "bone tubercle" as a separate entity. That the synovial membrane is often simultaneously affected is easily understood when it is remembered that both membrane and epiphyses are supplied by the same arteries.

PHYSIOLOGY.

By WILLIAM SNODGRASS, M.B., &c.

Relation of Maternal to Fœtal Circulation.—E. Wertheimer and E. Meyer have studied this by injection of aniline oil into the blood of the mother at full time. This substance has the power of transforming the hæmoglobin of the blood to methæmoglobin. The presence of the latter in blood may be detected by spectroscopic examination. The above observers found that while the blood of the mother might show the presence of a large quantity of methæmoglobin in the blood, and a consequent diminution in its respiratory capacity, the fœtal blood remained free from methæmoglobin. In other words, the toxic substance did not pass into the fœtal circulation, a fact the more surprising as it is found in the form of a soluble salt in the maternal blood. There is a selection of material in the placenta. Thus, Zuntz found that after injection of sulphindigotate of soda into the maternal circulation, a blue coloration appeared in the amniotic fluid, but not in the blood of the fœtus nor in any of its organs. According to Krukenberg, iodide of potassium behaves in a similar manner. It might be supposed that the toxic substance had passed to the fœtus, but not in sufficient quantity to give the characteristic spectroscopic appearances, but even so small a quantity as one in a hundred thousand parts can be readily detected, so that this objection

is not tenable. It is, however, noteworthy that the change of the hæmoglobin to methæmoglobin takes place in the corpuscles of the blood. It still remains desirable to ascertain whether hæmoglobin or methæmoglobin in solution in the blood plasma can pass through the placenta to the fœtus.

Effect of Ligature of the Hepatic Artery on the Glycogenic Function of the Liver.—MM. G. Arthaud and L. Butte have made an interesting communication upon this subject in the *Archiv. de Physiol. Normal et Patholog.*, January, 1890. Ligature of the portal vein is immediately fatal, but if the vein is closed slowly the animal may survive the operation, and the liver may perform its functions without any evident injury. On the other hand, closure of the hepatic artery leads inevitably to arrest of function and death of the liver tissue. Five experiments were performed upon dogs. The animals survived the operation, were quite lively for three or four days, showed signs of weakness about the end of the fourth day, and died on the fifth or sixth day. Examination of the liver, either immediately or some hours after death, showed complete absence of glycogen and of glucose. In no case was there a trace of peritonitis. But on examining the blood of the carotid artery an hour before and an hour after operation, it was found that there was much more glucose in the blood after the operation than before it. They argue that sugar is constantly being formed from glycogen and thrown into the blood, the glycogen being replaced by the vital activity of the liver cells. But when the arterial supply is cut off, the synthesis of glycogen is suspended, while the glycogen, already formed, may be broken down at the expense of the liver cells. At any rate, the experiments show that the circulation of arterial blood in the liver is indispensable to the accomplishment of the glycogenic function, and that the suppression of this circulation is followed by death.

Assimilation of Lactose.—A. Dastre (*Archiv de Physiol. Norm. et Patholog.*, 7th January, 1890) gives results of his investigations on the alimentary value of lactose. The nutritive *rôle* of lactose may be studied in five ways—by vascular injection, by artificial circulation in an organ of a mammal, by artificial circulation in the detached heart, by study of respiratory changes after injection, and by the action of micro-organisms and of fungi. The employment of four of these methods shows that lactose is not directly assimilable in its actual form. Observation of animals on a milk diet shows that lactose is utilised. Therefore it must first undergo a transformation similar to other digestive changes. Of the transformations of lactose, the simplest is that into glucose and galactose, which substances are directly assimilable by the tissue elements.

Sugars may be classified in the order of direct alimentary value as follows, beginning with the most refractory—saccharose, lactose, maltose, galactose, glucose.

The transformation of lactose has not been brought about by any of the digestive juices when freed from micro-organisms ; neither the pancreatic nor the intestinal juice invert lactose.

The liver has no transforming power on lactose.

Does the Removal of the Liver from Cold-blooded Animals cause the appearance of Lactic Acid in the Urine?—E. Nebelthan, in the *Zeitschrift für Biolog.*, Bd. xxv, 1888, discusses this question. At first he operated on tortoises, but found that after extirpation of the liver, although the animals lived from five to seven days, no urine was excreted. He then had recourse to frogs. 600 of these in nine weeks gave 102 litres of normal urine ; while 431 deprived of the liver gave 2,690 cc. of urine. They survived in general from four to seven days. The determination of the ammonia by Schlœsing's method gave an increase of one half in the animals operated upon. There was no uric acid in either case, nor any possibility of obtaining lactic acid as a zinc salt.

GYNÆCOLOGY AND OBSTETRICS.

By E. H. LAWRENCE OLIPHANT, M.D.

A Successful Case of Laparotomy and Supravaginal Amputation of the Uterus for Rupture.—Henry C. Coe, M.D., New York, in a reprint from the *Medical Record* of 2nd November, 1889, relates and comments upon this case. Rupture of the uterus took place during long continued attempts to deliver a large child (15 pounds). The rent extended from the cervix through the lower uterine segment and left broad ligament. The right utero-sacral ligament was also torn. The uterus was turned out of the abdominal incision, the cervix constricted with india-rubber tubing, the child extracted through the rent, and the uterus, with ovaries and tubes then excised. The stump was secured in the abdominal wound, but sloughed, and was removed at the end of a week, leaving a cavity which was stuffed with iodoform gauze. As a result of the sloughing also a cervico-vesico-vaginal fistula formed in the second week, and till the end of the fourth week urine and the douche water occasionally welled up into the abdominal wound. At the end of the fifth week, however, the abdominal wound had entirely closed.

Dr. Coe urges, as the lesson of this case, the necessity of resorting to operation at once when the uterus has ruptured during labour or pregnancy, and of avoiding attempts to extract the child per vaginam. A list is given of 14 cases hitherto reported showing 5 maternal recoveries.—J. K. K.

Concealed Pregnancy—its Relation to Abdominal Surgery. By Dr. Albert Vanderveer, Albany, N. Y.—*Apropos* of two which occurred in his own practice, Dr. Vanderveer has here collected cases in which abdominal section has been performed for various reasons during pregnancy, the operators in most cases not even suspecting the presence of that complication. The only valuable part of the paper consists in the tabulated statement of 75 cases which the author has collected. In 11 of these pregnancy was the only condition found on section. In 5 more the pregnancy was interstitial or in a bicornate uterus. In the remaining cases ovarian cyst or fibromyoma, or some other abnormal condition, had obscured the signs of pregnancy, and rendered the operation necessary, or at least excusable.—J. K. K.

Subsequent Behaviour of Cases of Extra-uterine Pregnancy Treated by Electricity.—A paper with this title was read by Dr. A. Brothers, before the Obstetrical Section of the New York Academy of Medicine (*New York Medical Journal*, January, 1890). The speaker was enabled, from the answers to his enquiries, and from published reports, to give a tabulated statement of fifty cases of extra-uterine pregnancy treated with electricity. A list was then given of twenty-five cases, observed for periods varying between one and eight years, after the employment of electricity. These patients were reported cured, and when last seen they were all enjoying good health. Many of them still carried traces of their old trouble ; and, while it would not be wise to assert that these small masses could not, in course of time, give rise to symptoms, up to the present time, they had caused no inconvenience. He gave the views of those who had employed this method, or as consultants, had seen the greatest number of cases so treated. Dr. T. G. Thomas had treated fourteen cases successfully. In one case only had the dead fœtal mass given trouble, and in that case all bad symptoms had passed off, and no operation had been necessary. Dr. Brothers' conclusions were, that the risk of rupturing the sac of an extra-uterine pregnancy, and causing death by hæmorrhage, was slight. Suppuration had not occurred in any case in which electricity was employed before the third month. Beyond the third, or possibly the fourth month, electricity

should not be resorted to. Electro-puncture was to be condemned in all cases. In case of mistaken diagnosis no harm was done. Under galvanism or Faradism, the early extra-uterine ovum could be checked in its growth, and caused to disappear entirely, or to become shrivelled up. The remaining masses had, thus far, caused no subsequent trouble.

Deep Incisions into the Soft Parts in Difficult Cases of Labour.—Under this heading the *New York Medical Journal* of December, 1889, quotes from a paper by Dührssen in the *Prager Med. Wochenschrift.* This operator claims to have saved ten mothers by this operation, though the children had all died during the prolonged labour. The operation is indicated in old primiparæ, where there is great rigidity of the parts, with weak pains ; when there is danger from eclampsia after premature rupture of the membranes ; when the pelvis is flattened so that the head will not engage in the superior strait ; and when the cervix is rigid or cicatricial as a result of venereal disease, carcinoma, ulceration, or operation. The technique is as follows :— No speculum is required ; the cervix is seized with the fingers or with forceps, and when the tissues are well stretched, an incision 3 ctm. deep is made toward the tuber ischii on each side, extending 4 ctm. up the vagina. The child is then easily removed. The hæmorrhage is slight, and easily controlled. After the birth the wounds are drained, and treated with iodoform. Dührssen asserts that there is no danger of the wound being torn to a greater depth, inasmuch as the canal thus formed is sufficiently large to allow of the passage of the child's head, without causing sufficient tension to tear the wounds any deeper.

Air Embolism after Plugging the Uterus with Iodoform after Placenta Prævia.—The *Centralblatt für Gynæk.* for January, 1890, quotes from a Bohemian journal a case recorded by Dr. Vavra, of Prague. The patient was an ii-para aged 38. Lateral placenta prævia ; spontaneous delivery. Expulsion of placenta half-an-hour later. Atonic hæmorrhage, in controlling which massage, ergotin, and cold and hot douching had no permanent effect. Accordingly iodoform plugging was resorted to. After a few strips of gauze had been inserted, sudden cyanosis, interrupted breathing, and in a few moments death. *Post-mortem* a large number of air bubbles were found in the veins of the broad ligaments in both " venæ spermaticæ internæ," in the inferior vena cava, in the right heart, and pulmonary artery.

On the Diagnosis of Pregnancy in the Early Months.—Dr. L. Eliot, in the *Jour. of the Amer. Med. Assoc.*, June, 1889, quoted in *Centralb. für Gynæk.* of December, maintains that during the early months of pregnancy the condition may be suspected by the condition of the pulse, which has a most unusual steadiness, being unaffected in pregnancy by locomotion or standing, or by sitting or lying. This condition has already been noticed by others (Jorisenne in 1878, and Schapiro in 1881).

Menstruation and Pregnancy after Removal of both Ovaries.—At the Southern Surgical and Gynæcological Association Meeting, held in Nashville, Tenn., U.S.A., in November of last year, Dr. G. J. Engelmann, of St. Louis, read a paper with the above title (*New York Med. Jour.*) The following were the conclusions drawn from the history and microscopical examination of his cases, which were corroborated by numerous cases of oophorectomy and double ovariotomy, whose histories had been recorded for a sufficient length of time after the operation :—(1) That the continuance of menstruation, after removal of both ovaries, was due to remnants of ovarian stroma left *in situ ;* (2) That portions of the ovarian tissue, however small, which remained after the removal of the greater portion of the organ, whether or not the Fallopian tube was preserved, might retain their activity, and continue the functions of the entire organ ; (3) Even elongated pedicles might contain ovarian stroma in which the functional activity of the organ might be

continued ; (4) That remnants of ovarian stroma did not necessarily retain their vitality and functional activity. His practical deductions he considered of still greater value to the operator, and they were these :—(*a*) For the successful performance of oophorectomy it was requisite that every particle of ovarian stroma should be removed if the desired result was to be expected with certainty ; (*b*) If shrinkage of fibres [*sic.* ? Fibroids], the limitation of hæmorrhage, or cessation of annoying symptoms was to be accomplished with the greatest certainty, both ovaries must be removed completely, or not even a particle of ovarian tissue left *in situ ;* (*c*) In the performance of double oophorectomy in women not yet beyond the climacteric, and not suffering from utero-ovarian reflexes, such healthy ovarian tissue as might exist should be spared in order that functional activity might not be impaired.

Books, Pamphlets, &c., Received.

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A System of Practical and Scientific Physiognomy ; or, How to Read Faces, by Mary Olmsted Stanton. Vol. I, profusely Illustrated. Philadelphia and London : F. A. Davis. 1890.

Practical Electricity in Medicine and Surgery, by G. A. Liebig, Jr., Ph.D., and George H. Rohé, M.D Profusely Illustrated. Philadelphia and London : F. A. Davis. 1890.

A Practical Text-book of the Diseases of Women, by Arthur H. N. Lewers, M.D. Second Edition, with 146 Illustrations. London : H. K. Lewis. 1890.

Treatment of Disease in Children, by Angel Money, M.D. Second Edition. London : H. K. Lewis. 1890.

Transactions of the Royal Academy of Medicine in Ireland, Vol. VII, edited by Wm. Thomson, M.A., F.R.C.S. Dublin : Fannin & Co. 1889.

The Workhouse and its Medical Officer, by Alfred Sheen, M.D. Second Edition. Bristol : John Wright & Co. 1890.

Chronic Urethritis and other Affections of the Genito-Urinary Organs, by M. Berkeley Hill, M.B., F.R.C.S. With Coloured Plates. London : H. K. Lewis. 1890.

Intercolonial Medical Congress of Australasia : Transactions of Second Session, held in Melbourne, Victoria, January, 1889. Melbourne : Stillwell & Co., Printers. 1889.

A Manual of Anatomy for Senior Students, by Edmund Owen, M.B., F.R.C.S. With numerous Illustrations. London : Longmans, Green & Co. 1890.

A Manual of Public Health and Sanitary Science, for the use of County Councillors, Members of District Committees, &c., by T. G. Nasmyth, M.D., D.Sc. Ed. Edinburgh : T. & T. Clark. 1890.
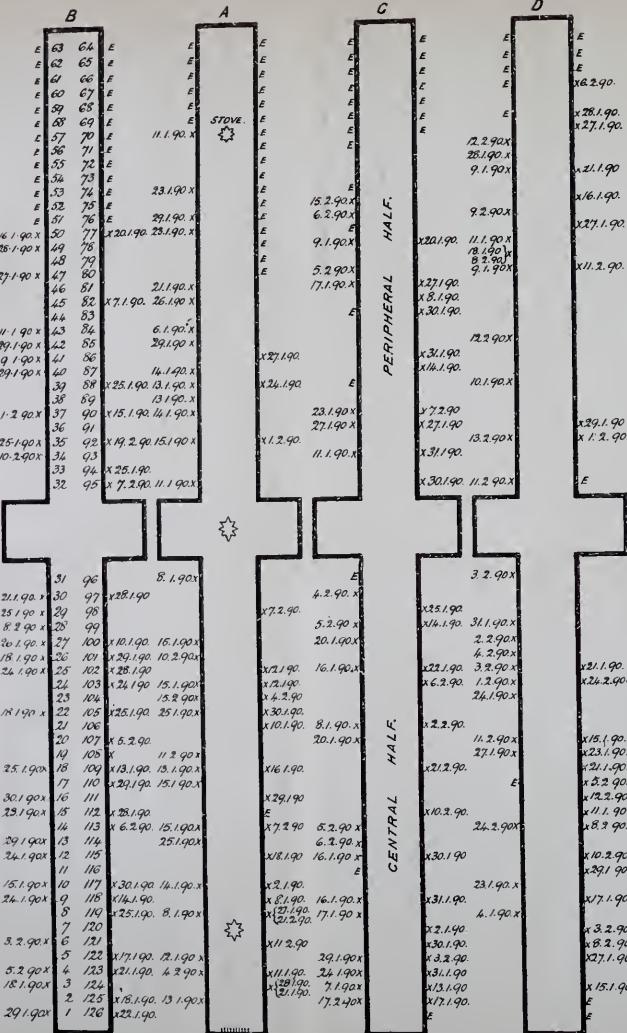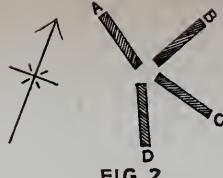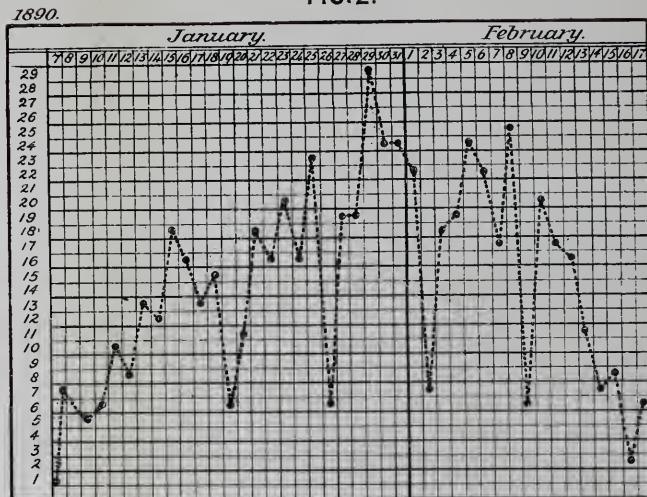
FIG. 2.

FIG. 3.

1890.

January.   February.

FIG. 1.

B   A   C   D

STOVE.

PERIPHERAL HALF.

CENTRAL HALF.

Date.	A Number of New Cases.	Date.	B Number of New Cases.	Date.	C Number of New Cases.	Date.	D Number of New Cases.
8.1.90.	3.	7.1.90.	1.	2.1.90	1.	4.1.90	2.
10 „	1.	9 „	1.	7 „	1.	9 „	2.
11 „	3.	10 „	1.	8 „	2	10 „	1.
12 „	1.	11 „	1.	9 „	1.	11 „	2
13 „	4.	13 „	1.	11 „	1.	15 „	1.
14 „	1.	14 „	1.	14 „	1.	17 „	1.
15 „	5.	15 „	2.	15 „	1.	18 „	1.
16 „	1.	16 „	1.	16 „	3.	21 „	3.
16 „	1.	17 „	1.	17 „	3.	23 „	2
21 „	2.	18 „	4.	20 „	1.	24 „	1.
23 „	2.	20 „	1.	22 „	1.	26 „	1.
24 „	1.	21 „	1.	23 „	1.	27 „	4.
25 „	2.	22 „	1.	24 „	1.	28 „	2.
26 „	1.	23 „	1.	25 „	1.	29 „	2.
27 „	1.	24 „	4.	27 „	3.	31 „	1.
28 „	3.	25 „	7.	29 „	1.	1.2.90	2.
29 „	3.	26 „	1.	31 „	3.	2 „	1.
1.2.90	1.	27 „	1.	2.2.90.	1.	3 „	3.
4 „	2.	28 „	2.	3 „	1.	4 „	1.
10 „	1.	29 „	6.	4 „	1.	5 „	1.
11 „	2.	30 „	1.	5 „	3.	6 „	1.
15 „	1.	1.2.90	1.	6 „	3.	8 „	3.
21 „	1.	3 „	2.	7 „	1.	9 „	1.
		5 „	1.	10 „	1.	10 „	1.
		6 „	1.	17 „	1.	11 „	3.
		7 „	1.	21 „	1.	12 „	3.
		8 „	1.			13 „	1.
		10 „	1.			24 „	2.
		19 „	1.				

FIG. 4.

ORIGINAL ARTICLES.

THE INFLUENZA EPIDEMIC OF 1890 AT H.M. CONVICT PRISON, BORSTAL, ROCHESTER.

(With Lithographic Illustrations.)

By THOMAS F. TANNAHILL, M.B., C.M.,
Medical Officer, H.M. Convict Prison, Borstal.

BORSTAL Convict Prison lies on the counterscarp of the North Downs; the edge of the Downs is two miles off in the south, and Rochester lies two miles away towards the north-east. The village of Borstal is distant half a mile to the north-west, and the river Medway meanders past the village from south to east by north. The prison is on the 350 feet contour, and a thin stratum of loam forms the subsoil, the mass of rock underneath being the chalk. At this height the prison has a free exposure, and is freely perflated by every wind that blows.

The accompanying diagram (see Fig. 2 on separate sheet) shows the bearings of the main building—comprising halls A, B, C, and D. Each hall is a disconnected one-storey building, with a central corridor and 63 cells on each outer wall, giving a total of 126 cells in each hall. Each hall is heated by three large stoves, and ventilation is designed to permit the heated air to pass into each cell through a louvred opening at the bottom of each cell door. Large air channels communicate with the outer air on each side, and deliver pure air

through a grating at each stove. In each cell there is a venti-
lator and a shaft for the escape of impure air.

Halfway up the hall there is a large recess on each side ; in
each recess are two w.-c.'s, only used when the prisoners are
confined to their halls.

At the outset of the epidemic I was able to question each
man who complained, as to his very earliest feeling of being
out of sorts ; but the cases began to multiply so rapidly, both
without and within the prison, that I had to confine myself to
faithfully recording the symptoms and signs on first applica-
tion. Prisoners, even more than persons at liberty, are anxious
to obtain medical advice as soon as they feel ill. In order to
simplify I give the accompanying diagram (Fig. 1), which repre-
sents the four halls lying parallel ; in " B " hall I have written
down the numbers of the cells—the corresponding numbers will
be found in the other halls at corresponding levels. The recess
practically divides each hall into a central half and a peripheral
half ; the numbers begin at "one" on the left side of the
central end. The stoves and air channels are placed respec-
tively against cells 7 and 57, and between the hall recesses.
Empty cells are marked E ; a cross against a cell number
indicates that the occupant of that cell had influenza, and the
date against each cross shows the first application for treat-
ment, and approximately the time when the illness assumed
its characteristic form. For some time previous to the out-
break the daily average number of complaining sick was 18 ;
after the onset a maximum of 45 was reached one day, although
nearly 40 were kept off the casual list by being admitted to
hospital. The accompanying table (Fig. 3) shows the number
of influenza sick day by day from 7th January, 1890, till 17th
February, 1890, a period of six weeks.

The maximum number under treatment as casual sick from
influenza was 29 on the 29th January, and from that day the
number steadily declined. The low numbers recorded for 19th
and 26th January, and for 2nd and 9th February, are due to
the fact that only urgent cases of sickness are complained of
on Sundays ; and, with regard to influenza, all the urgent
cases were admitted to hospital without delay. The accom-
panying table (see Fig. 4 on separate sheet) gives the chrono-
logical march of the disease in the halls.

Two important points should be noted in this table—viz.,
the severity of the early attack in " A " hall as indicated by
the numbers affected, and the comparative paucity of cases
in " D " hall early in January, and greater severity in
February ; in the latter hall there was no reason whatever

to suspect the existence of the disease until 4th January, 1890; it is otherwise with regard to halls "A" and "C." In "A" hall certain prisoners complained of symptoms that I cannot affirm were not premonitory of influenza, although the disease did not attain its full force until a few days later. I give the cell numbers and the date of initial symptoms.

Cells.							Dates.
57,	.	.	.	.	.	.	Dec. 30, 1889.
8,	.	.	.	.	.	.	Dec. 30, ,,
117,	.	.	.	.	.	.	Jan. 2, 1890.
53,	.	.	.	.	.	.	Jan. 2, ,,
102,	.	.	.	.	.	.	Jan. 4, ,,
43,	.	.	.	.	.	.	Jan. 6, ,,

Of these, 8, 53, and 102, were men over 50 years of age; 8 had broncho-pneumonia; 53 and 102 suffered from slight bronchitis; 43 was a young man of fine physique, and did not suffer more than twenty-four hours; 117 was a youth of 20 years. While working on the farm, scattering extremely offensive pig manure, he was suddenly taken ill with vomiting and purging; presented a collapsed appearance, and the temperature was slightly over 100° F. He was at once admitted to hospital; temperature and motions noted; over his abdomen and chest from 20 to 30 scattered rose coloured spots appeared and faded away within three days; the motions became moderately firm, and had a healthy colour; the temperature fell to 98° F. the evening of admission, rose to 99° F. the following evening, and subsequently fell and remained at 98° F. After the first day he felt perfectly well. The party employed scattering manure contained 22 men; no other member of it suffered with him, although all of them were equally exposed to the fumes driven in their faces by a moderately strong S.W. wind. Errors in diet may reasonably be excluded, and it may be assumed that this was a case of influenza, the disease expending its whole force on the alimentary tract. Many undoubted cases occurred subsequently of a precisely similar nature. With regard to "D" hall, two prisoners complained of symptoms, and subsequently developed influenza. The following are the cells and the dates of anomalous symptoms:—

Cells.							Dates.
3,	.	.	.	.	.	.	Dec. 31, 1889.
120,	.	.	.	.	.	.	Dec. 31, ,,

No. 3 had a fully developed attack on 7th January, 1890 ;
No. 120 on 2nd January, 1890. In " B " hall no complaint
was made until 7th January, 1890. The first complaint
of illness amongst the prisoners was made on 30th December,
1889, in " A " hall, and the last case was noted 24th February,
1890, in "D " hall. Previous to the epidemic there was no
special sickness ; there was a total absence of colds, chaps,
and chilblains, and these were absent because the causes that
produce them were likewise absent. Under these conditions,
there was no difficulty in watching the rise and progress of
the epidemic, the disease, whatever its nature be, pursued
its course free of perturbating influences.

At this point the question may pertinently be asked, How
did influenza reach the prisoners ? I grant at once that all
the possible sources should be freely interrogated and suc-
cessively exhausted ; but life is too short for a wholesale
enumeration. I see the necessity, but I have a wholesome
regard for the reader. The chief contact of prisoners with
the outer world is through their officers ; the wind also has
free access to them.

Some of the officers lodge within the prison, many of them
live in quarters around the prison, others live in the village
of Borstal, and a few live in Chatham and in Rochester. All
the children attend school away from prison—the majority
attend Borstal village school, a few attend schools in Rochester.
Officers, their wives and families, freely mingle with the outer
world, and the chances of infection being conveyed from the
outer world to the prisoners is neither improbable nor remote.
There is no self-evident reason for adopting the wind theory ;
and it should seem more scientific, first of all, to examine, on
analogical grounds, the usual sources of infectious disease.
Premising, however, that a knowledge of how infection may
be conveyed in one particular way does not exclude the
possibility of other sources. Anything highly speculative
will find its place more appropriately under my final remarks ;
here I shall examine the chief link that connects the prisoners
with the outer world—the officers. The first case that came
under my notice was a warder's daughter living in the village
of Borstal ; she was attacked on the 25th December, 1889.
This girl has been suffering from Raynaud's disease for several
years ; and, on this occasion, Raynaud's disease and paroxysmal
hæmatinuria followed the influenza ; she also had severe
conjunctivitis. The girl's father continued at his duty, and
mixed freely with the officers and the prisoners ; he also had
a slight attack, so slight that he paid little attention to it,

and the date could not be fixed; but it was several days after his daughter was first affected. On the 28th December, 1889, a principal warder was attacked, but being a man of powerful physique, he continued on duty, and suffered for a long time. His duties took him all over the prison, and brought him freely in contact with the prisoners in their halls, at their work, and in chapel. On 1st January, 1890, three more officers were attacked; one lived in Rochester, one in the village of Borstal, and one in prison quarters. On the 2nd, 4th, and 6th January one officer was attacked each day. These officers had no contact with the prisoners; but they mixed freely in the mess-room with those officers previously attacked. There is clear evidence here that, previous to the prisoners being attacked, some officers were affected through a source outside the prison, and these officers came from infected areas. The officers and prisoners assemble each morning for prayers, which last twenty minutes; and on Sundays there are two services, each about one and a half hour's duration. Under these circumstances full opportunity was afforded for the spread of any disease of an infectious nature. Amongst the officers and their families 105 cases came under personal observation; but, in order to obtain an approximation to the number of free people actually affected, I caused to be circulated a paper asking how many in each family complained of pain in the head and back, and cough and weakness. The result gave a total of 135; this includes wives and children, but excludes the officers themselves, and the families of the superior officers. The numbers may be summed up thus—

> 135 cases according to census.
>   54 ,,   amongst officers.
>   15 ,,   children and servants in superior officers' quarters.

Total,   204

Of this total, 105 were personally observed and treated, the remaining 99 occurred in houses I was attending, and their treatment was carried out by the respective parents, who used the drugs ordered for those I had personally attended.

With regard, then, to the incidence of the disease—

> There were .   .   204 cases amongst the free people.
> And .   .   .   203   ,,   ,,   prisoners.

Giving a total of 407 cases of influenza.

The population was as follows:—

Free population,   401, including officers, their wives, and children.
Prison population, 429, daily average for January and February.

830

Of the total population, 49 per cent suffered from the epidemic. The free suffered more than the prison population, the attacks in the former being 50·8 per cent, in the latter 47·3 per cent—a difference of 3·5 per cent. The staff is composed of 84 officers; of these, 54 suffered, giving a percentage of 64·2 attacked. With regard to the age of sufferers from influenza, I submit a rather rough analysis of the numbers affected at different ages.

TOTAL AT DIFFERENT AGES.

Under 21.	21 to 30.	30 to 40.	40 to 50.	50 to 60.	60 to 70.
247	158	211	151	52	11

NUMBER OF CASES AT DIFFERENT AGES.

Under 21.	21 to 30.	30 to 40.	40 to 50.	50 to 60.	60 to 70.
137	82	97	66	22	3

This table is not sufficiently accurate to permit of an inference being drawn as to the selective power of the infection. The spread of the disease and its incidence at different ages appeared to me more governed by exposure to infection than by selection. The first item in the table depends on the accuracy of the census. Of 247 under 21 years, 137 were attacked, giving a percentage of 55 attacked; and it is just amongst children that infection has the freest play.

With regard to the potency of the infectious principle, a higher percentage of attacks occurred in comparatively crowded spaces, as the following facts will show:—It will be found on reference to the diagram of halls, cell numbers, &c., that the greatest number of empty cells are situated in the peripheral ends of the halls, in D hall cells; 32 and 95 belong to the central end. The reason is obvious for their place in the diagram. The total occupied cells in the central ends are 242, and the influenza cases were 129: in the peripheral ends the respective numbers were 173 and 72, whereas, had the same ratio been kept up, there should have been 91·8 cases of influenza in the latter. Practically the central ends had an average excess of 5 over the peripheral ends. Along with this must be noted that all the

prisoners entered the halls by the doors at the inner ends of the central half, and all the traffic was conducted by the same route. Probably there was a concentration of the infectious principles at the central ends. The same thing was noted amongst the free population; in those houses relatively over-crowded, owing to the presence of large families, the disease successively attacked all the inmates of the house. In one house of nine inmates the disease first attacked a little boy just home from school; the attack spread through the family, the mother being the last to be stricken fourteen days after the first appearance of the disease in her house. In other instances, the fathers alone being affected, no extension of the disease was caused by them in their homes, due possibly to three causes—being absent from their homes on duty for a considerable portion of the day, coming little in contact with their children, and having a relatively greater air-space. In one of these instances the disease was subsequently introduced by a domestic, and the disease spread to the children. In this case the domestic formed a tolerably permanent focus of infection. There were 29 officers who came little in contact with the prisoners; some of them not all. Of these, only 10 suffered from influenza, giving 34·5 per cent affected—that is, 30 per cent under the rate recorded for the whole staff. There were 6 officers doing duty in the hospital, all of whom were attacked.

With regard to the period of incubation there were naturally few unequivocal cases that permitted the observation to be made; in certain families it was perfectly evident that two or three days elapsed between each individual attack, in five cases I was able to note that influenza appeared 48 hours after exposure to other cases of the disease. In one of these cases, the patient, a housemaid, went out for a day and visited her father's house where influenza was prevalent, after 48 hours she had a sudden attack, the temperature ran up to over 102° F., 48 hours after this her companion nursemaid developed the disease, and the children of the house followed suit at less definite intervals. In another case a similar occurrence took place, the girl went home for a day and developed influenza after 48 hours, at her home were several cases of the disease. In another case a little school girl was confined to bed with an attack, and her mother was attacked exactly 48 hours after the child came home and went to bed. In another case all the members of the family were suffering and a sister of the mother came to nurse them all, exactly 48 hours after her arrival she was

suddenly seized with a genuine attack of influenza, in this case the patient came from a non-infected to an infected house. After passing through the epidemic unscathed at Borstal, I paid a visit to a brother-surgeon who had six days previously had a sudden attack, I spent two hours with him in a small room, and 48 hours afterwards I developed pain in the back, became feverish and passed a restless night, on the following day I did my duty and subsequently took a brisk walk after which I felt perfectly restored. I had doubts as to my case being genuine, but one thing helped to convince me that it was—viz., a peculiar effluvium that I had previously noted as accompanying the disease in prisoners. I give this latter fact for what it is worth. If my own case be included there are six cases showing a positive incubation period of 48 hours. With regard to the duration of infection in my own case I caught it from a patient on the sixth day. In one other case a housemaid developed the disease on 9th January, 1890, and went home to her mother's for about 14 days; it was at least over 14 days ere she went back permanently to her duties—on 3rd February, 1890, one of the children developed an acute attack, then the other two children followed. In this case the father of the family had suffered from an attack, but his attack was antecedent to the housemaid's. From the situation of the house and domestic regulations, there was no reason to suppose that any other source of infection but the housemaid or the father existed, but as the father came little in contact with the children it is natural to assume that infection came through the housemaid, this would give from the 9th January, 1890 to 3rd February 1890, a period of 25 days as the possible duration of infection. I do not press this point, but in the absence of positive overwhelming evidence I deem this case worthy of being recorded.

With regard to the mode of onset, there were three types. The phenomena observed were fairly characteristic of infectious disease in general. In four cases there was marked implication of the nervous system; three of these became extremely lethargic, and were with difficulty roused; one of them began with a severe convulsion, followed by vomiting and diarrhœa—all four were boys under the age of 10 years. Another marked type began with extremely sudden vomiting and diarrhœa, and in one of these cases the patient was collapsed almost to syncope. In the third type, of commonest occurrence, the disease took its rise more in the form of a bad general cold. The duration of the disease in this class was

unduly prolonged, and those so affected proved more liable to complications than those affected in the other forms.

The temperature was recorded in the cases of 36 prisoners and several officers. As Professor Gairdner has lately given a temperature chart in the *Journal*, I will not include any charts here. In one case the temperature rose to 105° F. in an uncomplicated case. In this case notably, and in several other cases of apparent relapse, the relapse was not accompanied by febrile reaction, but appeared to be a return of the initial general pains. The complications were not numerous. In 7 cases there was epistaxis, in 3 there was disturbance of the menses, there were 3 cases of broncho-pneumonia, and 5 of bronchitis.

Only one death occurred. This was a prisoner, aged 46, who had never been a strong man. He was admitted to hospital on 6th February, 1890, and died suddenly on 11th March, 1890. Owing to his comparatively low vitality I kept him in hospital long after he had recovered. The *post-mortem* revealed fatty degeneration of the heart, large white kidney, milk-spot on the anterior surface of the right ventricle, universal adhesion of the pleura by old fibrous tissue, and tubercle with small cavity in the apex of the right lung. On his admission to prison I noted that the circumference of his skull was 23 inches. The brain weighed 57·5 ounces, and in addition there was 6 ounces of serum in the ventricles, which were much dilated. There was slight wasting of the convolutions, and the brain mass was of a leathery nature. During life he showed a very fair amount of intellectual ability.

It will be noticed, in examining the diagram of halls, that the dates of attack do not show the disease spreading, at intervals of 48 hours, from cell to cell in a definite line. No one would expect any infectious disease to behave in such a regular manner, except under very special conditions, and these conditions never exist in a moving population. Prisoners do not remain in a certain cell all their imprisonment: changes are made from hall to hall, from party to party, and from cell to cell in each hall. I have had drawn up all the changes made in these several ways during the time the epidemic prevailed. The document itself would form a small book, but the result is easily stated. There are from 40 to 50 changes every week. This, amongst 429 prisoners, permits of numerous rearrangements, and greatly facilitates the spread of infection.

In order to keep my paper within decent limits, I shall

make few remarks. The facts recorded will tell their own story, if carefully examined. Influenza first came within the circle of prison life on 25th December, 1889. On the 27th and 28th December two warders, suffering from the disease, went freely about the prison; and on the 30th December two prisoners complained of anomalous symptoms that may have been premonitory of influenza—one of these had a fully developed attack on the 8th January, the other on the 11th January. The first absolutely unequivocal case amongst the prisoners occurred on the 2nd January, and previous to that date there were five officers walking about the prison with well marked influenza. Having gained admission, the disease went step by step through the prison and prison quarters, not in a simultaneous manner, but in a period of sixty-one days, dating from 27th December, when the first officer was attacked, until the 26th February, 1890, when the last case occurred in the person of an officer who was suddenly seized on that particular date.

The facts submitted justify the following conclusions:— Influenza is a highly infectious disease, spreading from person to person, showing, in certain cases, an incubation period of forty-eight hours, passing through a well defined cycle of changes from onset to termination—retaining its infectiveness for an indefinite period.

Three questions present themselves to the mind for solution —viz., What is the efficient cause of the disease? How does it act in space? Why does the disease appear in epidemic form at widely separated intervals? Now, a seed thrown into suitable ground will, under suitable conditions, pass through a well marked development, and will bring forth seed bearing the specific qualities of the parent seed. A certain seed always produces after its kind. It may be necessary for the integrity of the "theory of evolution" to maintain that absolute species do not exist in nature; but we also see and accept the fact that animals and plants do behave in a specific manner—each produces after its own kind—and we should be immensely surprised at the occurrence of the contrary. By analogy with other infectious diseases we may conclude, if it be not already placed beyond doubt by the German pathologists, that influenza is due to a seed or germ; the definite cycle of events and specificity encourage this view. In the immense reservoir of the atmosphere there is room for countless millions of germs, and we know that millions exist in the air of our rooms. The seeds of plants suffer dispersion by the wind, and it looks reasonably probable that it will also aid in the dispersion of

the germs and germ spores that people the air. The germ also will be affected by all the conditions that influence animal life. When the flora and fauna of one year are contrasted with another year, great variation is found in the numbers of the respective species; in one year the earwig was so numerous in this district as to amount to a plague; the following year scarcely a single one was to be found, but the wood louse and common spider were represented in greatly increased numbers. We must believe that invisible forms of life behave in a similar manner. Is the occurrence of influenza in an epidemic form coincident with the maximum number of influenza germs? Scattered cases of influenza occur during the minimal years and keep alive the germ, and permit its gradual increase; when the maximum mass of infection is reached an explosion may be initiated by periodic meteorological phenomena. This aggregation and explosion may be at one specially favoured spot, and from there may pass in an incredibly short space of time round the globe. When we take into account the perfect communication between different parts of the world, and the short incubatory period of the disease, it is seen that spreading from person to person satisfies the necessities of the case.

INFLUENZA IN GUERNSEY, 1890.

By JOHN AIKMAN, M.D.

THE appearance of influenza in Guernsey was so far delayed that we had some hope that we might remain altogether outside the epidemic wave.

In December, 1889, a detachment which arrived from Ireland to strengthen the East Surrey Regiment, stationed at Fort George, brought with them some cases of the disease. Fort George is an exposed position, and the disease appeared among the soldiers in its catarrhal form, with few high temperatures, but attended by intense headache and limbache, and followed by great prostration. Surgeon-Major Ryan witnessed the apparent infection of men in the hospital, after a few hours admission to the general ward of infected subjects, and he sets down the period of incubation at about two days.

At this time there was no evidence of the existence of the disease in an epidemic form among the civil population. But there were a few isolated cases of a suspicious disease; people complained of having chills, with great headache and limb-

ache, which they nursed and got over, with the exception that they remained weak and anæmic, and that they had loss of appetite, and a foul taste in the mouth. The tongue had a thin slimy, leaden-coloured fur upon it, and there was a marked tendency to vertigo. It sometimes happened among such cases that the initial stage was severe enough to call for treatment, and the following is a description of one of the earliest typical cases which I saw :—A working man, living in the Lower Rohais Road, got up in the morning to go to his work as a gardener. He did not care for his breakfast, felt ill, but started for his work. Before he had gone far, he turned back home, and threw himself on his bed, where he remained till I saw him in the forenoon. When seen, he was semicomatose, showed his tongue when asked, but could not be persuaded to open his eyes or answer questions. His temperature was 102° F., pulse 100, and his skin dusky and flushed. This state lasted for two days, during which he ate nothing and drank little. At the end of that time he roused suddenly, so suddenly, that his wife told me, when I entered the house, that her husband was no better ; but, when I saw him in bed, to both her surprise and mine, he answered questions in a weary way, and without any attempt to move ; his pulse was 60 and his temperature 97° F. This case recovered with no other sign beyond a rustling at the base of the lungs, similar to that which one hears in the first few long breaths taken by aged and bedridden people. No other case occurred in the household.

The number of slight cases, undoubtedly due to some pandemic rather than infectious influence, increased, and by the middle of February epidemic characters showed themselves.

Reviewing the cases in my own practice at this stage, the well marked ones reached a temperature of 103° F., and after from thirty-six to forty-eight hours of fever, fell to about 97° F., the fall in temperature being accompanied by profuse perspiration. The pulse puzzled me at first. It was at times in marked discrepancy with the temperature ; but Dr. Whipham's paper, in the *Lancet*, 22nd February, 1890, called attention to the fact that the fall in the pulse-rate preceded by some hours the fall in the temperature, and this observation I amply confirmed.

The low temperature was usually maintained for two days, and then began to rise again, usually to a degree or so above the normal. With this rise there almost always occurred the rustling sound at the base of the lung to which reference has

been made; and, as a matter of observation, all the *troublesome* pneumonic and bronchitic symptoms took place at this stage.

In severe cases, and without any exposure to cold, profuse suppuration from the bronchial mucus membrane showed itself, and it is worthy of note that while in some cases the temperature rose to quite the height of the previous fever stage, in others with all the bronchial symptoms the temperature remained at or below 97°.

Chest symptoms and even pneumonic crepitus did occur during the initial fever, but in my experience subsided with the fever. The troublesome chest symptoms always attended the rebound of the temperature.

There were similar gastric symptoms with the onset in some cases—nausea and vomiting, with headache, backache, limbache, and stupidity. But these were the symptoms at the onset, and were quite distinct from the gastric symptoms which attended the rebound of temperature. The later gastric symptoms had little of vomiting and much of nausea. The tongue was dirty and slimy rather than thickly coated, and its colour was that of the first coat of white paint over a leaden protection covering, such as one sees upon a door or window frame. I never saw the gastric symptoms end in anything more serious than a transient jaundice. In this point they differed much from the chest symptoms, which not infrequently left a troublesome wheezy bronchitis, with profuse purulent expectoration and considerable shortness of breath.

The initial headache sometimes reappeared, as did also the backache and limbache. Vertigo remained late in the cases. Sometimes as late as the 17th day the patients could not stand with the feet together and the eyes shut, but in no case was the knee jerk lost or in any way affected.

A very marked loss of weight followed this short fever. From a considerable number of reliable observations the loss ranged from 8 to 10 lbs. The greater losses were respectively 20 lbs., 14 lbs., and 11½ lbs. The smallest loss recorded was 4 lbs. Of course, in all cases these figures relate to weight recorded within a reasonable time previous to the attack. They must also be taken into consideration along with the fact, observed in the Royal Institution for Deaf Mutes at Copenhagen, that in the presence of the epidemic growing children failed to make their normal increase in weight.*

* A curious observation relating to influenza is quoted in *La Nature* (20th March, 1890, page 471) from a Copenhagen journal. At the Royal Institution for Education of Deaf Mutes there, the pupils (about seventy

Three cases of cystitis occurred during the time of the epidemic. All were severe, sudden in their onset, and made rapid and complete recovery. The recovery was so complete that I cannot but think that they must have been due to epidemic influence.

Two cases occurred during the puerperium, with a temperature in each case of over 105° Fah. Both cases made a good recovery: in neither case did the infant take the disease, and in neither case was the secretion of milk arrested.

In only one case did the disease end in death. A lady over 80 years of age sank in rebound stage of the temperature with signs of left side pleuro-pneumonia. There was a somewhat higher rate of mortality among the less well off classes, but even among them the death-rate was inconsiderable.

The geographical distribution of the epidemic was very marked. It was infinitely more abundant in the low lying parishes than in the higher ones. This is somewhat remarkable, as the flat low lying parishes have a northerly and easterly exposure, while the higher parishes are southerly and westerly.

It is impossible to give any idea of the number of sufferers, but the number of households visited gives an increase upon the same date in last year of 231, the increase beginning about the 10th of February, and tending towards the normal after the 15th of March. During the time specified very few single cases occurred in families; sometimes six or seven individuals were in bed in the same week.

The question of infection I cannot pretend to answer.

boys and girls) have for seven years been regularly weighed every day in groups of fifteen and under. This new experiment has yielded some interesting results. Thus, it has been found that the children's growth in weight has occurred chiefly in autumn and in the first part of December— there is hardly any in the rest of winter and in March and April, and a diminution then occurs till the end of summer. Last year proved an exception. The curves of weight were quite like those of previous years till 23rd November. In the four weeks thereafter, while each child has usually gained on an average over 500 grammes, the girls last year gained nothing, and the boys only 200 grammes each (less than two-fifths of the normal amount). The contrast with 1888 was even more remarkable, 700 grammes having been the average four weeks' gain in that year. There was no modification as regards food or other material conditions. Now, the influenza epidemic appeared in Copenhagen towards the end of November. While six of the professors at this institution were attacked, there were no pronounced cases among the pupils ; but it is supposed that, germs of the disease having entered the place, the struggle with these on the part of the children absorbed so much vital force that the organs of nutrition failed to give the normal increase of weight after 23rd November.

There were more than the usual number of inexplicable escapes, but in odd instances the source of conveyance seemed obvious. Letters written by sufferers and the envelopes, no doubt fastened by wetting the gum by saliva, were several times brought markedly under suspicion as a means of transmitting the disease. More than once bedridden invalids contracted the disease after opening letters from friends who were recovering, and as often the disease did not spread in the household. In one notable instance which occurred in a parish remarkably free from cases, the household was a second time invaded by the occurrence of influenza in a servant who had visited an infected parish, but again the disease did not spread. Further, the disease showed a tendency to spread among the adults of a household and spare the children, but if it once attacked a child the other children in the house usually followed suit. Now children may be tempted to eat their elders' food, but the adults seldom finish up what the children leave. My observations carry me no farther on the question of infection than to bring the saliva under suspicion.

There remains the question of treatment. During the initial fever the liquor ammon. acet., with $7\frac{1}{2}$ grain doses of salicylate of soda, certainly made the symptoms more bearable, and seemed to shorten the fever stage. Chloride of ammonium, with and without henbane, quite failed in my hands to do any good. Quinine was equally useless, and antipyrin was only used when the fever was high and prolonged into the third day. In one case a rapidly rising and alarming temperature fell in a few hours under its use. During the stage of collapse, when the pulse was small and soft, and the temperature low, ammonia and bark, with a little chloric ether, gave better results than quinine, but the antipyretic effect of quinine came into play during the rebound of the temperature. I added tincture of squills to the quinine when the moist sounds at the basis of the lungs showed themselves with a rebound of temperature. I think it did good, but I am at least sure that it did not produce the symptoms which squill should have done had that condition been of the inflammatory nature insisted upon by Dr. Wilks.

But, above all things, Professor Easton's syrup of the phosphates of iron, quinine, and strychnine, improved the later stages of the disease. A moderate fever temperature was not raised by it. Gastric symptoms were not aggravated, the foul taste in the mouth improved, the tongue cleaned, the regularity of the bowels returned, and the appetite and

strength gained daily. The suggestion for its use came from a fellow-practitioner; and, although I tried it doubtingly at first, I am convinced that the results were excellent. I can offer no explanation unless it be that the blood stasis, which is evidenced by physical signs in the sequelæ of influenza, is totally different in causation from the blood stasis of the early stages of inflammation. But it is also true that, if prolonged unduly, inflammatory stasis, with exudation, will and does result.

ON INFLUENZA IN JERSEY.

By ANDREW DUNLOP, M.D.,

Consulting Physician to the Jersey General Dispensary.

As early as the end of last November there were some cases in Jersey, which, by the light of subsequent experience, seem to have been attacks of influenza.

In December I had three cases of pneumonia, two in one family, in which, I am now pretty sure, the pulmonary affection was a consequence of the same disease. During the first two weeks of January fairly well marked cases began to occur—*avant coureurs* of the advancing foe; they became more numerous during the next week, and then the main body of the epidemic came upon us with a rush. It prevailed with great intensity until about the middle of March, when it began to decline, and about the end of the month it departed abruptly, leaving only a few straggling cases behind.

Though the epidemic was intense and widespread during the months of February and March, yet severe or fatal cases were very few in number. At the same time, however, though the general death-rate of the town and parish of St. Hélier was not raised during these months, yet the percentage of deaths from diseases of the respiratory organs (phthisis being excluded) during January, February, and March, was considerably higher than in the corresponding months last year. How much this increase was above the average rate it is impossible to say, as until the beginning of last year the Registrar's returns did not furnish the necessary data for ascertaining the death-rates of the different groups of diseases.

An attack of influenza was usually ushered in by shivering, accompanied or quickly followed by a general feeling of illness

and severe frontal headache and pain in the back, and in the arms and legs. Sometimes—indeed, very often, the attack came on quite suddenly. A person might go out feeling quite well, and return in an hour with intense headache and racking pains in the back and limbs. When the patient was examined, the temperature was found more or less elevated, rarely over 102·5°. Sometimes, however, it rose to 104° on the first day, and was found nearly normal next morning. Generally speaking, the temperature fell to normal on the third day, while the severe pains gradually left the patient within the next day or two, and before the end of the week he was pretty well, except that he was left in a state of bodily and mental prostration out of all proportion to the intensity and duration of the febrile symptoms. An invariable, or almost invariable, symptom was a suffusion of the conjunctivæ, without any lachrymation, so that on visiting a patient the diagnosis was generally made before the practitioner had seated himself at the bedside, and it was confirmed by the patient's opening statement that he had a bad headache, and ached all over the back and limbs. The frontal headache was often very severe, the pain was generally of a bursting character, as if the eyes were being thrust out, or as a sailor told me, "as if he were going to unship the top of his head." The pains in the limbs seemed to spread all along them, though sometimes the joints were also painful. A red, scarlatinaform eruption was found in many cases. It was most prominent on the cheeks, where it formed a large sharply defined patch. It was less frequently noticed about the neck and on the back of the hands, and on at least one occasion there was some observed on the thighs. Gastric and gastro-intestinal irritation often accompanied or followed the attack, and I had several cases where there was severe vomiting, lasting for several days. Sore throat, redness of the tonsils and fauces, was sometimes associated with the other symptoms, and occasionally sore throat with fever appeared to be an alternative mode in which the disease expressed itself. In my own family, and in several other households, I found that while the greater number of those attacked had the usual symptoms, some of the others had simple sore throat with more or less elevation of temperature. In one or two cases that I saw the heart's action was notably interfered with—that is to say, there was irregular action, with a pulse sometimes weak and sometimes forcible. In one case there was a slow (about 50), full, irregular intermitting pulse for nearly a

week, while the patient remained in a drowsy half hebete condition.

With all these varieties, however, the majority of the cases were very like each other, the essential symptoms being frontal headache, suffused eyes, aching pain in the back and upper and lower limbs, furred, often somewhat reddish tongue, slight constipation, and elevation of temperature. In many cases, however, when the patient was not seen until the second day, the temperature was found normal. Catarrhal symptoms were conspicuous by their absence, although they sometimes appeared at the very end of the attack, when also the patient was sometimes troubled with cough for some days. Broncho-pneumonia and bronchitis were occasional complications, or rather sequelæ. A curious point was the fact that now and then the patient had a well marked recurrence of the disease a week or two after the first attack, and I have heard of a third attack taking place.

As to the mode of invasion and propagation of this disease, and whether influenza is to be considered infectious or not, I have no decisive evidence to bring forward. The earliest cases never seemed to me to act as foci of infection from which the disease spread. They seemed more to be scattered about like the first drops of a thunder shower, to be followed speedily by the full violence of the storm. During the height of the epidemic single cases often occurred in large households, but more commonly the greater number of the members of a family suffered. When a household was attacked the cases generally followed each other in quick succession, one or two every day, or every other day, an interval that seems very short to be consistent with the theory of its passing from one to the other by infection, unless a very limited period of incubation be assumed. In a large girls' school, where there were twenty-one cases amongst the resident pupils, all of them, except one, were in girls who slept in the same dormitory.* This was a large hall divided into cubicles, and the epidemic began at one end of it and passed on towards the other. It was curious to note that the removal and isolation of the first cases seemed to have no effect in checking the progress of the epidemic, but that it ceased almost immediately after the girls, who had not been attacked, were taken out of the dormitory, and the room was converted into an infirmary. It seemed as if the disease had fixed itself on this room, and made it a focus of infection. Of the seventeen resident mistresses, who

* There were forty-six resident pupils in the school, thirty of whom slept in this dormitory.

slept on another floor, only three were attacked, and there was only one case amongst the eight servants. I was told that, during the Christmas holidays, while one of the mistresses of this school was at home with her family in a town in the north of England, where there was no influenza, one of her brothers came from London, and the day after his arrival developed a sharp attack of the disease. The family was a large one, and no attempt was made to isolate the patient; but there was not another case in the house. A month or two later, however, when the influenza attacked the town, the epidemic promptly seized upon the household, and ran through it. It ought to be mentioned that, so far as I know, the first cases in Jersey occurred in the chief town, St. Hélier, which has a population of about 30,000, and that it was not until the epidemic had begun to show some symptoms of decline there that it attained its maximum of prevalence in the country parishes.

Dr. Gairdner, in his interesting address published in the March number of this *Journal*, quotes a writer in the *St. James' Gazette* of the 21st January, saying that "the object of the article is to show forth a probable case (confessedly not a proved case) that, both in London and on the Continent, the growth of epidemic influenza has been accompanied, and preceded by, unusual stillness in the atmosphere, and that its decline has been coincident with, and very probably due to, the replacement of stagnation by movement."

The history of our epidemic here, however, would not lend much support to this theory. With regard to January, our meteorological report says—"Weather generally mild, but a very unsettled, wet, and *remarkably stormy* month. Gales on 5th, 19th, 20th, 21st, 22nd, and 23rd (that of 23rd being unusually severe, parts of the town flooded by the sea). Boisterous winds on 9th, 17th, 18th, 25th, 26th, and 27th." With regard to February, the report is—"Weather generally fine and dry, and at times mild, though nights and winds often very cold. Stormy on 7th, and from 13th to 16th, and stormy or windy from 22nd till end of month." For March, "Very cold for the first five days, but remainder of month generally very fine, dry, and mild, and at times quite warm. Snow on 1st, 2nd, 3rd, and 4th. More or less stormy on 2nd, 10th, 20th, 24th, and 31st."

INOCULATION, WITH SUGGESTIONS FOR ITS FUR-
THER APPLICATION IN MEDICINE, ESPECIALLY
IN MITIGATING THE SEVERITY OF MEASLES.*

By HUGH THOMSON, M.D.,
Vaccinator to the Faculty of Physicians and Surgeons, Glasgow,
and to the Glasgow Royal Infirmary.

THREE years ago I had the honour of reading to this Society
a paper on "Inoculation," wherein I endeavoured to show that
the reason why the virus of small-pox inoculated into the
skin gave rise to a milder attack of the disease than when it
was introduced by infection—that is to say, by the air inhaled
by the lungs—was, that " by implanting the microbes of the
virus in a part well suited for their development, and that a
non-vital part, we create a local disease which spoils the blood
of the persons inoculated as a suitable medium for the culti-
vation of the microbe, and consequently of giving rise to a
general disease.   That, from the descriptions of inoculated
small-pox given by the most successful inoculators, an early
and extensive development of the disease in the inoculated
part foretold a mild attack of general disease with a favour-
able issue, whilst a late and scanty local effect prognosticated
opposite results.   That, thus, the order of evolution of the
disease was reversed, the skin being the first attacked and the
blood the last, instead of the blood being the first and the
skin the last.   In this way we avert the danger of inflamma-
tion of internal vital organs, for before the blood becomes
affected so as to give rise to a general disease, it has been
robbed of its susceptibility to undergo zymosis.   I desire now
to consider whether inoculation may not be employed with
the object of mitigating the severity of other exanthematous
and zymotic diseases, as measles, scarlatina, &c.   We know
that it has been so employed in many of the diseases of
animals.   Why may not the human species be equally
benefited by the practice ?

M. Roux, in his Croonian Lecture on " Preventive Inocula-
tion," delivered on behalf of M. Louis Pasteur before the
Royal Society, expressed himself as follows :—" Jenner's great
discovery, which seemed to open so wide and hopeful a
horizon, has remained hitherto a solitary fact in medicine."
In so saying I do not think he is perfectly accurate.   The

* Read before the Medico-Chirurgical Society, 21st March, 1890.

true initial step in the business was the discovery of inocula-
tion of small-pox. Jenner's discovery, great though it was,
was but an episode. Vaccination would never have been
thought of but for the previous knowledge of inoculation.
The true place of cow-pox is that of an attenuation of small-
pox. Even Jenner's discovery was not the first in the line of
attenuation. Curiously enough, the inoculators of India had
long before used a method of attenuation not unlike that
employed by Pasteur in attenuating the virus of rabies—viz.,
that of always employing matter procured from the inoculated
pustules of the preceding year, which doubtless had under-
gone, by drying and storing for a year, considerable attenua-
tion,* and had become much milder and safer in its effects.

To Pasteur belongs the great merit of greatly extending the
practice of inoculation in mitigating the severity of diseases
in animals, and in arresting the progress of rabies in man.
This he has accomplished by the discovery of methods of
attenuating virus ; let us hope he will one day discover
methods of attenuating the virus of human diseases also.

Little has been done in this direction as yet. An outbreak
of scarlatina, which had been traced to a disease in cows
prevailing in a farm at Hendon, and distributed along with
the milk of the cows, caused an investigation to be made by
the Local Government Board, and the analogy between the
disease in the cows and scarlatina has been forced upon us,
and it is hoped will one day lead to important practical
results. Dr. Klein, who was commissioned by the Local
Government Board to make the investigation, thus states
in his report, " Such milk " (milk contaminated by particles
from the ulceration of the teats) " would then practically
correspond to an artificial culture of the streptococcus, such
as we have found capable of setting up a general disease,
when inoculated subcutaneously into calves. It is true we
have as yet no experience of the inoculation of a known milk
subculture into the human subject, but in the case of calves,
we have learnt that the general disease resulting from the
inoculation of an Agar Agar subculture, had characters closely
allied to, if not identical with, human scarlatina. Then
feeding the animals with the cultures has not yet been tried,
so that at present we are without information as to the
characters of any disease which may be produced in calves
by that means." † This information, I am happy to say, has
been since supplied by Dr. N. Carmichael, who, in a paper

* See Woodville on *Inoculation.*
† Dr. Klein in Local Government Board Report, 1885-86, *Supplement.*

read before the Philosophical Society of Glasgow, showed that
"a calf fed on the milk of a cow similarly affected to those
at Hendon, was seized with an acute febrile illness, which
seriously endangered its life."   Dr. Carmichael also tried
inoculation with the cultures of the micrococcus in calves,
but with only partial success.   "In one calf, however, inocula-
tion produced a slight febrile illness, with a little mainly
local desquamation of cuticle."   These so different results,
according as the virus was introduced by infection on the
one hand, or by inoculation on the other, correspond exactly
with the results as witnessed in other diseases ; and appear to
me quite easily accounted for in that way.   As, for example,
in the inoculations for foot and mouth disease, where Klein
found that "two pigs subcutaneously inoculated, and then
fed with active virus on four different occasions, wholly
escaped foot and mouth disease, although it is well known
pigs have a greater susceptibility to the disease than even
sheep."   Klein further states *—"A curious fact demonstrated
by these experiments was this, that while cultivations of this
streptococcus, when introduced by mouth and nose, produced
this disease, when inoculated into the skin failed to do so,
though it seemed to protect them against subsequently con-
tracting the disease when subjected to the first method of
infection."   Thus we see it is not essential to obtain protec-
tion that there should be even an appreciable local manifes-
tation resulting from the inoculation.   Hitherto we have
had only inoculations in animals to show.   Reasoning from
analogy, we should, however, expect inoculation to be followed
by equally good results in man, especially with the example
of small-pox before our eyes.

We are nevertheless not wholly dependent on analogy.   As
regards scarlatina, I may adduce an observation which Dr.
Stirton made some time ago.   A child, whom he had vacci-
nated, showed an eruption of scarlatina the day after he had
taken lymph from it, with which he had vaccinated other two
children.   About the eighth day there appeared an eruption
like erysipelas spreading from the vaccine vesicles, not like
the ordinary areola, which he attributed to the inoculation of
the virus of scarlatina along with that of vaccinia.   He was
the further confirmed in this opinion by the insusceptibility
manifested by these two children to scarlatina on a subsequent
occasion.   The above are all the facts bearing upon the

* *Transactions of the Epidemiological Society of London.*   New Series,
vol. vii, Session 1887-88, on "Some of the Infectious Diseases common to
Man and the Lower Animals."

inoculation of scarlatina that I have been able to gather. I had, however, held the opinion for a long time that measles, being a disease which, like small-pox of old, no one escapes, ought to be treated in this respect much as small-pox had been before the introduction of vaccination. I was speaking of this matter to Dr. Gairdner one day lately, when he directed my attention to a series of experiments by Francis Home, M.D., as early as the year 1758, whose own words in introducing the subject I cannot do better than quote : *—
" Considering how destructive the disease is in some seasons, considering how many die even in the mildest epidemical constitution, considering how it hurts the lungs and eyes, I thought I should do no small service to mankind if I could render this disease more mild and safe, in the same way as the Turks have taught us to mitigate the small-pox. I suspected strongly that the cough, often so harassing, even in the mildest kind, was produced by receiving the infection mostly by the lungs, and I hoped that this symptom would abate considerably if I could find a method of communicating the infection by the skin alone." Briefly described, his method of operating was to make a very superficial incision, where the eruption was most copious, and collect the blood which slowly exuded upon a bit of cotton, then having made an incision in each arm of the person to be inoculated, after the bleeding from these had stopped, to insert a bit of the cotton saturated with the morbillous blood into them, where it was allowed to remain three days.

From the prejudices of mankind, he says, he found it difficult to get the blood as he wanted it, and much more difficult to find subjects for inoculation.

EXPERIMENT I.—*21st March.*—A child, 7 months old, with scabby head, running behind the ears, and an eruption over its body for three months, but otherwise healthy, was inoculated with the blood taken from a measly child two days before.

27th March.—The child was a little hot all last night, and had sneezed often this morning. The tongue was white, and the eyes watery. The wound on the right arm was dried up, but that on the left arm was running plentifully. There was no inflammation on either.

29th March.—Eruption began to appear on the face.

30th March.—About a dozen spots of a very florid colour on various parts of the body.

* *Medical Facts and Experiments*, by Francis Home, M.D. 1759.

1st April.—A few more measles are come out, and larger than the former, which are now beginning to dry.

3rd April.—Spots still out. The scabs on head and running behind the ears dried up.

4th April.—Measles going off. The eczema cured.

Note.—The period of incubation, from the date of inoculation to the first appearance of eruption, was eight days.

EXPERIMENT II.—*27th March.*—Inoculated a child of 8 years old, with the same blood, which had been kept ten days loosely in my pocket-book. The sixth day, this child sneezed much, but never was hot or struck out. This child took measles in the natural way about two months afterwards. Failure attributed to deficiency of morbillous matter.

EXPERIMENT III.—This and the following experiment were made on two sisters who had a cough all winter, but were otherwise florid and healthful. The blood was taken the day before, so that the cotton was yet moist. They were inoculated on 20th April. The eldest, about 6 years, turned hot, thirsty, a little feverish, with a white tongue and diminished appetite, the next day after she was inoculated. This febrile attack he attributed to fear from the incisions, or to cold, never having seen similar symptoms in other cases.

27th April.—Hot and restless in the night. Sneezes. Diarrhœa last night. No appetite. Tongue white. Thirsty. Pain in back of head.

28th April.—Much the same, but purging gone. A great quantity of water comes from eyes, so that she wets many cloths in the day. Her eyes cannot bear the smallest light, but are not in the least inflamed.

30th April.—Has had the measles out since yesterday. Pulse quite calm. A great quantity still of sharp humour from the eyes. No appetite.

1st May.—Her eyes less weak, and the running diminished. Measles out.

2nd May.—Eyes well, and measles gone.

Eruption appeared on ninth day. Fever on seventh.

EXPERIMENT IV.—The youngest was 3 years old, and began on 27th April to be hot in the night and to sneeze.

28th April.—Started sometimes last night. Cool and easy through the day. Tongue white.

29th April.—Not hot last night, but sneezes sometimes.

30th April.—Some measles out. Not hot, and no cough. Tongue white.

1st May.—Not quite so easy as yesterday.

2nd May.—Measles pretty large. More drought.

3rd May.—They were still to be seen, but disappeared next day.

Note.—The disease in the above two cases ran its course in a fortnight, the eruption appeared on the ninth day; fever on the seventh.

EXPERIMENT V.—A sister of the two former, aged 8 years, was inoculated on 3rd May with the same blood, now fourteen days old, but carefully kept in a glass.

10th May.—Somewhat uneasy to-day.

11th May.—Pain in the head; pulse very little affected. Running at her eyes, but no inflammation. Loss of appetite. Thirst. Sneezes much and coughs a very little.

12th May.—Much the same. Some spots have appeared.

13th May.—About two dozen out. Hot and sneezes.

15th May.—All the measles gone. This child was out all the day in the open air, till the day of eruption.

Eruption appeared on tenth day.

EXPERIMENT VI.—At the same time (3rd May) a child, 8 months old, was inoculated with the same matter. On the 10th the child began to be hot, to sneeze, to cough, to have a running from the eyes, and sometimes to vomit. The mother carried it about the country till the 13th, at which time about three dozen measles appeared.

15th May.—Are yet to be seen, but beginning to disappear.

Eruption probably appeared on tenth day.

EXPERIMENT VII.—*25th May.*—A child, 8 years old, with the same blood, kept five weeks (from 19th April), had afterwards no symptom of the disease.

EXPERIMENT VIII.—*3rd June.*—A girl 13 years old, inoculated with blood taken 27th May from a girl who had a great quantity; very considerable fever and difficulty of breathing.

9th May.—Hot last night, sneezing, pain of head, and a little cough.

12th May.—Pain of her head and back; bleeding at the nose yesterday and to-day; pulse 94, but no eruption. I was afterwards told that this girl had had measles two years ago, and that the mother had been led to this from the view of gain.

Experiment IX.—Inoculated 14th June, a child 5 years of age, with the same blood (taken 27th May).

18th June.—Shivering at night; headache and sneezing; hot in the night.

19th June.—Well all day, but the same complaints at night, with a gentle looseness.

20th June.—A little drought and whiteness of tongue. Sneezes, but no cough. Weak and watery eyes; pain in her head; pulse 120.

21st June.—Three coughs this morning; pulse 110. No purging since last night. Sneezes often. Measles beginning to appear.

22nd June.—Looseness; no cough. Turned hot and vomited at bed-time, which was probably owing to her sitting at the door this night, which was cold; after this more measles came out. Moderate looseness.

23rd June.—Measles still out.

24th June.—Almost gone; pulse 83. Had gripes to-day, which ended in a looseness.

Note.—Eruption appeared on eighth day, and convalescence on eleventh.

Experiment X.—*6th July.*—Inoculated a child 18 months old, and of a very weakly constitution. Being afraid that the blood, taken 27th May, was now too old, and being uncertain whether some taken 27th June would answer, as the person from whom it was taken was not feverish. I made use of them both mixed together.

9th July.—Feverish and droughty.

10th and 11th July.—Better.

12th July.—Has coughed and sneezed some to-day. Pucked a little.

13th July.—Coughed some in the night time, and sneezed a little. Great drought; no appetite.

14th July.—Cough pretty often; sneezes sometimes. Had many spots out this morning, but almost all gone in again.

15th July.—A great many measly spots out, but especially on the sides and thighs, where they almost touch one another; they are much more distinct than they have been this winter in the natural way. Eyes have scarcely yet watered; thirsty; sneezes a little; coughs more.

16th July.—Loose belly.

17th July.—Looseness gone; spots disappearing; no cough or sneezing.

This patient had more of the cough and less of the sneezing

and watering of the eyes than any of the rest. It would seem that the latter secretion being diminished, more of the saline matter was separated by the trachea and lungs. This child took the measles again.

20th August.—The spots were more numerous and ran more together, and the disease attended by a severer cough, and a little difficulty of breathing. A natural looseness carried off these symptoms.

Was this disease owing to a new infection, or was it the effect of the inoculation ? I am of the latter opinion ; because after the first measles it was seized with a swelling of the parotid gland, a proof that all the matter was not carried off by the eruption ; this continued during the interval with constant cough and sneezing ; besides, there was not another natural measles in the town or country so far as I could hear. I have seen several cases in the natural way where one infection produced two eruptions. Why may it not likewise in the inoculated ?

EXPERIMENT XI.—*29th August.*—With blood taken two days ago from the former patient, I inoculated a child 8 months old. This child was getting teeth, and had been troubled with a cough and looseness for eight days.

7th September.—Had been hot, restless, droughty, and had sneezed for some nights. Some spots seen yesterday.

8th September.—Tongue white ; coughed and sneezed some. About a dozen and a half spots.

9th September.—Spots almost gone.

Note.—Eruption appeared on ninth day.

EXPERIMENT XII.—*30th August.*—With the same blood a very healthy child aged 18 months was inoculated.

7th September.—Has cried all night, and has been hot and thirsty. Looseness ; coughed and sneezed.

8th September. — About three dozen spots to be seen. Vomited all her drink this morning. Tongue very white. Very fretful. Rubs her eyes frequently. Pulse 132. These last two experiments were tried at a time when there was no natural measles ; and consequently at a time of the year very opposite to the disease.

Note.—Eruption appeared on ninth or tenth day.

EXPERIMENT XIII.—That I might see the difference of the disease, when it is communicated by the lungs alone, and when by the skin alone, on 25th May, I put into the nose of

a child, for an hour, some cotton which had been some time in the nose of a measly patient, the fourth day of the eruption, but no disease followed.

11th June.—Put some cotton into the nose of a child 2 years old, which had been into the nose of a measly child for an hour, the day before, but no disease followed.

13th June.—Put some cotton dipt in measly blood (20th May) into the nose of a child; but no disease.

I cannot say, from these experiments, that the disease may not be inoculated in this way; for the children let the cotton remain too short a time in their noses.

I have hitherto narrated the naked facts as they presented themselves to me, that every person may have an opportunity of judging for himself. Let us now draw some conclusions from the foregoing experiments.

Early in this century, Mr. Wachsel, of the Small-pox Hospital, inoculated a lad, Richard Brookes, with fluid taken from some of the measly (or miliary) vesicles, and the inoculation was successful. In 1822, Professor Speranza, of Mantua, inoculated himself and six boys, in the manner recommended by Home, with complete success.

The latest recorded experiments were those made in 1842, in Hungary, by Dr. Katona. We are informed that he failed only in 78 cases out of 1,112 (7 per cent), that the resulting disorder was mild, contrasting favourably with the severity of the reigning epidemic. The infecting blood was drawn from the surface most effloresced. We further learn, that a red spot, with surrounding areola, followed.*

The first conclusion we may draw from these interesting experiments is the perfect practicability of inoculating measles by the proceedings narrated. The second is their perfect safety. The third, the great success of inoculation in producing a much milder attack of the disease than when it results from infection. A notable feature in the inoculated disease is the earlier appearance of the eruption, about the ninth or tenth day, whereas, in the natural form, the period of incubation is twelve to fourteen days before the eruption appears; sometimes even longer. I have seen a case which, to all appearance, was rather over three weeks. Further, there was much less bronchial affection, and catarrhal symptoms in general, observed in the inoculated.

I am not aware whether the method adopted by Dr. Katona differed in any way from that practised by Home; but it is

* *Lectures on Eruptive Fevers*, by Dr. Gregory, 1843.

to be noted that, whereas he observes that a red spot, with surrounding areola, followed the inoculation, Home says nothing of such an appearance. This is indeed the local effect I would have expected and desired. Judging from what occurred in inoculations with variolous matter, in the hands of the most successful inoculators, this result was obtained by making the scarifications or incisions as superficial as possible. It is, therefore, that which I would recommend to be adopted in inserting the virus. I am of opinion, also, that the use of blood for inoculation—which, we all know, is objectionable, as containing the germs of other diseases than that which we desire to communicate—might be dispensed with. I imagine that by raising a small blister, about the size of a sixpence, say, on a part where the efflorescence was most abundant, the serous fluid contained would be charged with the germs of the morbillous matter.

[Since reading this paper at the Medico-Chirurgical Society I have had an opportunity of trying this method. On 3rd April I raised two small blisters on the back of a child's arm, on the site of two measly patches, by applying a little liq. episphasticus, and in six hours had produced vesications from which I obtained a tube of serous fluid, with which I inoculated two children, aged respectively 4 years and 19 months, making two insertions in each on the left arm. Thinking the inoculations insufficient, I obtained next day another tube of serous fluid from the blisters, which had again filled, and made other two insertions in each child, this time on the right arm.

For the first two days after the inoculations the insertions presented a papulous appearance, which thereafter died away gradually. Slight catarrhal symptoms, consisting of coryza, watering of the eyes, and occasional cough, have been present— now the twelfth day since the inoculations, but no eruptions on skin or other general affection.

I am of opinion that the inoculations have failed, unless they are to be regarded in the light of the inoculations by Klein with "foot and mouth disease" in pigs, or that of Dr. Carmichael with the streptococcus of scarlatina in the calf, as effective without unequivocal manifestations.]

The next point for consideration is, What are the circumstances which should guide us in carrying out a systematic inoculation of the population? For that is what I think should be aimed at, seeing the omission of measles from the

list of infectious diseases required to be notified, is a confessed inadequacy of our ordinary sanitary regulations to cope with the disease. Inoculation seems to be the only way by which we can control and regulate the incidence of the disease.

From a table, which 1 here show, of the mortality from measles in the eight principal towns of Scotland during each month, from 1873 to 1881, it appears that, in January, the total deaths were 369, or 6·93 per cent; in February, 432, or 8·11 per cent; in March, 654, or 12·27 per cent; in April, 689, or 12·93 per cent; in May, 673, or 12·63 per cent; in June, 628, or 11·79 per cent; in July, 528, or 10·10 per cent; in August, 302, or 5·67 per cent; in September, 202, or 3·79 per cent; in October, 221, or 4·15 per cent; in November, 260, or 4·88 per cent; in December, 360, or 6·75 per cent.

Thus the mortality in March, April, May, and June was three times as great as it was in September or October; in July nearly thrice; in February twice; in January nearly twice; and, in December, nearly twice. In November, although a cold month, the mortality is not much over that of October.

From the accompanying table it is seen that the mortality from hooping-cough, bronchitis, and pneumonia is almost exactly in the same ratio for these months as that of measles, showing a close alliance between them. The prevalence of measles is not dependent upon season or weather, but the fatality of it is, to a large extent, dependent upon its associa-tion with diseases affecting the lungs and bronchial membrane, such as hooping-cough, bronchitis, and pneumonia. It would, therefore, be of importance to limit inoculation as much as possible to the months in which these diseases are least prevalent, which, judging from the mortality, are the months of September and October. It is to be noted that over 50 per cent of the deaths from bronchitis are in children under 5 years of age, and over 44 per cent of those from pneumonia are likewise in children under that age; as to hooping-cough, we know that it attacks almost at the same age as measles.

As to the age, therefore, at which inoculation ought to be done for measles, it can scarcely be done too early. But, seeing it is of importance to avoid pulmonary complications, the months of September and October first, after the child has attained its sixth month, might be chosen.

We are not able, unfortunately, to state what proportion of attacks of the disease occur before the age of 5 years, as notification of these has not been required hitherto, but I am glad to see that they have begun in Edinburgh to require it. Through the kindness of Dr. Littlejohn, I am enabled to

MORTALITY FROM MEASLES, HOOPING-COUGH, BRONCHITIS, AND PNEUMONIA IN THE EIGHT PRINCIPAL TOWNS OF SCOTLAND DURING EACH MONTH, FROM 1873 TO 1881.

	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total.	Under 5 Years.
Measles,	369	432	654	689	673	628	538	302	202	221	260	360	5,328	4,969
Per cent,	6·93	8·11	12·27	12·93	12·63	11·79	10·10	5·67	3·79	4·15	4·88	6·75	100·00	93·26
Hooping-cough,	932	1,006	1,060	1,026	1,072	842	729	608	528	502	616	796	9,717	9,191
Per cent,	9·59	10·35	10·99	10·56	11·03	8·65	7·50	6·25	5·43	5·17	6·34	8·19	100·00	94·55
Bronchitis,	5,091	4,341	4,286	3,532	3,105	2,361	1,921	1,554	1,605	2,276	3,567	4,969	38,608	19,597
Per cent,	13·2	11·2	11·1	9·15	8·04	6·11	4·98	4·02	4·16	5·90	9·24	12·9	100·00	50·76
Pneumonia,	1,424	1,216	1,355	1,269	1,320	1,135	859	689	672	959	1,117	1,449	13,464	5,942
Per cent,	10·6	9·03	10·06	9·42	9·80	8·43	6·40	5·12	4·99	7·05	8·29	10·8	...	44·13

state the ages of those attacked during the month of February last, when a severe epidemic has been raging in that city. It thence appears that 62·25 per cent are under 5 years, and 82·4 per cent under 7 years of age.

It is to be noted that the greater proportion of attacks are in children under the age at which school attendance begins. That a certain connection between school attendance and the spread of the disease however exists, may be inferred from what was observed during an epidemic in the Staffordshire Potteries lately, reported on by Mr. Spear. It was noted that when the schools were closed the epidemic appeared to be arrested, but as soon as they opened again, it recommenced. The comparatively small number of children at school age attacked, shows that the school children contract the disease at school, and convey it to their homes, where all who have not already had it are immediately attacked. The fact suggests to me that a good time for inoculating, until at least a more systematic method be adopted, would be whenever the disease was thus brought into a family. The first attacked would furnish matter for inoculating the rest. Under such circumstances, there could be no objection to the proceeding, as all would inevitably be infected in a short time, and if it were necessary to employ blood for the purpose, it would be family blood.

In conclusion, we may be allowed to express the hope that inoculation will no longer be regarded as a solitary fact in medicine, as applied to mankind. It is doubtless the reluctance to make the human subject the subject of experiment, the fear of doing harm, the want of faith in the proposed preventative. And yet is not every advance in therapeutics more or less an experiment? What are all the first of new operations but experiments, and often without any preceding trial on animals, directed of course by the light of reason. They are undertaken, no doubt, under the pressure of some actual suffering, or immediate danger to life from a disease which they are intended to relieve, but it is understood that they are attended with risks peculiar to themselves. Where then is the difference between these experiments and those of inoculation? The difference, I opine, lies in that the inoculations are undertaken for the prevention of a possible or probable evil, whilst the others are for an actual one. In the case of measles, however, it may be said that inoculation would be for the prevention of an inevitable although future evil.

THE EXAMINATION OF THE EYE.

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(Continued from page 280.)

WE now approach a most interesting part of our subject—
namely, the examination of the refraction of the eye. This is
essentially the most scientific part, but we believe that the
main principles can be so popularly explained as to be readily
understood by any one who is capable of learning to solve a
simple equation.

The importance of this subject cannot be over-estimated, for
glasses unquestionably hold a foremost position as therapeutic
agents in the treatment of eye diseases. Let us hear the
words of one well entitled to speak. In the preface to the
English translation of Landolt's well known work we find the
following sentences, which in our opinion cannot be contested :
—" We therefore venture to draw the conclusion that, in order
to treat the eyes successfully, an intimate knowledge of their
optical construction and their functions is indispensable."
Again—" At least two-thirds of the patients who consult an
oculist suffer from optical disturbances. But even the surgery
of the eye is closely connected with physical and physiological
optics. The most skilful operator will fail to realise the object
of an operation for cataract unless he is able to substitute a
proper glass for the removed crystalline lens. A strabismus
operation, when undertaken without an exact knowledge of
the optical and muscular functions of the eye, is but a rude
and even dangerous experiment."

In illustration of these views, we have already mentioned a
case of chronic conjunctivitis which seemed to us to be the
expression of an uncorrected astigmatism. We would further
remark that we have rarely seen a case of chronic, long con-
tinued eczema of the lids, or, as it is often called, *blepharitis
hypertrophica,* without finding some error of the refraction.
Far be it from us to say that the entire pathology of blepharitis
is ametropia, and that its only treatment is the use of glasses.
Still, where there is a tendency to the existence of this con-
dition, such an error of refraction will certainly help to make
it chronic, and the correction of such an error is to us an

essential element in its treatment. Thus, chronic inflammation of the conjunctiva and of the lids, equally with pain and difficulty in reading, ought always to direct our attention to the state of the refraction. Lotions and ointments are easily made, and any one can write an almost indefinite number of prescriptions; but they are only half the battle. He who would be a competent ophthalmic practitioner must be prepared to examine the eye as an optical instrument. He who imagines that eye diseases can be for the most part treated with remedies makes almost as great a mistake as he who supposes that they are of little value, and allows himself to be carried away with the physical questions which a study of eye diseases involves.

With these remarks we must now turn our attention to an elementary consideration of refraction in general, and of the refraction of the eye in particular. Those who are sufficiently interested in the subject will find a fuller discussion of the subject in Donder's well known work, and in the English edition of Landolt. All that we can attempt here is to give you the rudiments, hoping that such information as we may give will be of practical value, and incite some of you to extend your studies.

All bodies which are visible in nature are so because they either emit or reflect rays of light. Thus, if we light the gas, we at once see the flame, because it is self-luminous. We see the other objects in the room, because they reflect the rays of light emitted by the gas flame. Now light, whether emitted or reflected, consists of undulations or waves. As to the nature of these undulations, and the differences which give rise to colour sensations, we refer the reader to works on physics. There are, however, certain changes of direction which light undergoes when it comes in contact with a transparent body which must claim our attention. When a ray of light is propagated in space, it extends in a straight line from the point of propagation till either it becomes so feeble as to be no longer visible, or till it meets some object. We do not need to follow the changes which take place when the object is not transparent; they are chiefly those of absorption and of reflection. When the obstacle is transparent, then part of the light passes through the object, part is reflected, and a third part is used in making the surface of the transparent body visible. The two first portions are of importance to us, so we may dismiss the third. If, for example, a ray of light, indicated by the line *A* in Fig. IV, impinges on the surface of a sheet of water at the

point O, then a portion of it is reflected, as indicated by the line $O A^1$, making the angle $A O N$—i.e., the angle between the line of propagation and the perpendicular to the surface of the water, equal to the angle $A^1 O N$. In other words, *the* angles of incidence and of reflection are equal. Should the light impinge upon the surface in the direction of the perpendicular, it will be reflected also along the perpendicular —i. e., it will follow the same course, after reflection, as before it, making an angle of 90° with the surface. Another portion of the light passes through the water. Should the ray strike the surface obliquely, then the light which passes into the water is bent from its original direction. This bending is called refraction, and the amount of bending follows definite laws.
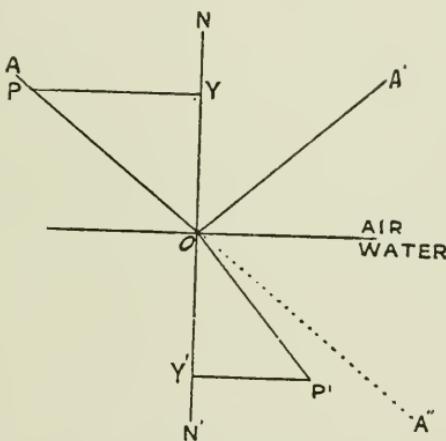
FIG. 4.

Let us take any distance, $O P^1$ along the line $O M$, and let us measure a similar distance, $O P$ along the line $O A$, and let perpendiculars be drawn from these points to the line $N N^1$, then the length of the line $P Y$ always bears a constant relationship to the line $P^1 Y^1$. In the case of a ray of light passing into water, the proportion would be as 4 is to 3. Thus, if the line $P Y$ were 4 inches, then $P^1 Y^1$ would be 3 inches; or, if the one were 4 feet, then the other would be 3, and so on.

The line $Y^1 P^1$, divided by the line $P^1 O$, is called the sine of the angle $P O N^1$; and the line $P Y$, divided by the line $O P$, is called the sine of the angle $P O Y$. But the angle

$P \ O \ N^1$ is the angle of refraction, and the angle $P \ O \ Y$ is
the angle of incidence. Hence the sine of angle of incidence
(generally written $sin \ i$) always bears a constant proportion
to the sine of the angle of refraction (generally written $sin \ r$).
This proportion is often indicated by the letter μ. Now,
the same laws are true for the refraction of a ray of light
from air into glass, only the proportion is different, and differs
with various kinds of glass. From the above example you
will observe that when light passes from one medium into
another more dense, it is bent towards the perpendicular; and
when from one medium into another less dense, then it is bent
away from the perpendicular. Thus, in Fig. IV, the ray $A \ O$,
when it enters the water does not continue in the direction
$O \ A^{11}$, but is bent towards the perpendicular in such a
direction as $O \ P^1$. On the other hand, if the source of light
were in the water, a ray $P^1 \ O$, in passing into the air, would
be refracted away from the perpendicular, and follow the
direction $O \ A$. An object placed at P^1 under the surface of
the water would be seen by an eye at A, as if it were placed
at A^{11}.

We have no intention of elaborating this subject, interesting
though it be, but we would now direct your attention to the
case of the prism, and this we would do as simply as
possible.
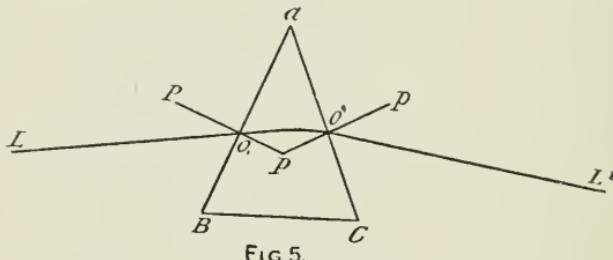
Fig. 5.

Let $A \ B \ C$, Fig. V, represent the section of a glass prism,
and let $L \ O$ be a ray of light meeting the surface of the prism
$A \ B$ at O. Now, as the ray at the point O passes from a less
dense medium into a denser, it will be refracted towards the
perpendicular—*i. e.*, towards the line $P \ P$. It will therefore
pass through the prism in some such direction as $O \ O^1$. At
the point O^1 the light passes from a denser medium into one
less dense; it will be refracted away from the perpendicular
$P \ P^1$, and will assume such a direction as $O^1 \ L^1$.

Fig. VI represents two such prisms touching each other by their basis. L and L^1 are two rays of light parallel to each other. Were we to follow the same construction as in the previous case, we would find that these rays, after passing through the prism, tend to meet at a point which we may call F.
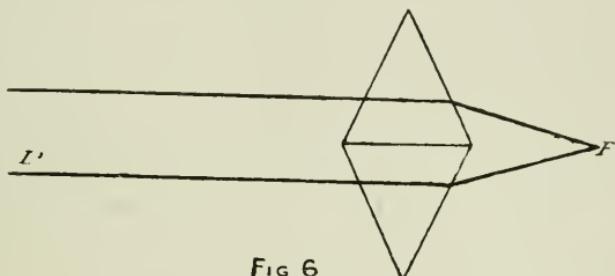
Fig 6

Fig. VII represents two prisms touching by their apices. Here we find that after refraction two rays of light, L and L_1, diverge as if they came from a point F^1. Now, if you imagine that the surfaces of the prisms figured in Figs. VI and VII are not rectilineal, but are regularly curved—*i.e.,* curved to a given radius, then you have the simplest idea in Fig. VI of the biconvex lens, and in Fig. VII of the biconcave lens. From this we observe that convex lenses tend to converge rays and concave to disperse them.
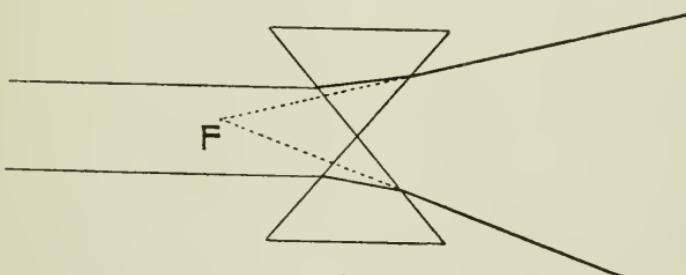
FIG. 7.

We must now say something as to the amount of convergence and of divergence produced by convex and concave lenses respectively, for this is a matter of the first importance, but somewhat too complicated to yield to popular treatment. Pursuing our plan of making our instruction very elementary, we shall leave out everything that is not absolutely necessary. Let us suppose that several rays of light L_1, L_2, L_3, parallel to each other, are incident on the surface of a biconvex lens,

Fig. VIII.   Then the ray L_1, being the central ray, passes through the centre of the lens without refraction, for it passes through the tangents to the lens surfaces at its points of immergence and emergence at right angles.   The rays L_2 and L_3 are bent, and from the previous considerations we find that they are bent towards the line L_1, which line is called the axis.   Now, if the distance from the axis to L_2 is the same as that of L_3 from the axis, and the amount of bending on passing through the lens is the same, then after refraction both these lines will cut the axis at the same distance from the lens—*i. e.*, at the point F^2.   This point is called the principal focus of the lens.   The principal focus of a biconvex lens is not exactly a single point, but it is convenient to regard it as such.   If parallel rays of light had come from the side on which the point F^2 is situated, then the principal focus would have been at F^1.   It is to be observed that the distance between F^1 and the centre of the
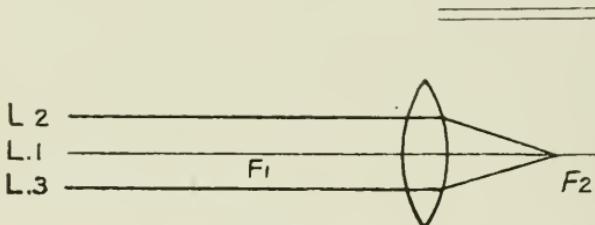
FIG. 8

lens is the same as that between the centre of the lens and F^2.   One other property is to be observed—viz., that if the source of light is placed at F^2 the rays of light, after emerging from the lens, would be parallel like the rays L^1, L^2, L^3. Light in nature consists either of parallel or of diverging rays.   Strictly speaking, all rays are diverging, but the divergence is so slight when the rays have traversed a considerable space—the angle between the rays is so very small, that they may be said to be parallel.   In ophthalmic practice we generally regard all rays of light coming from a greater distance than 20 feet as parallel.   Hence, as we have already seen, Snellen's large test types are arranged for that distance.

If, now, we look at a near object, say a book, then each point of the book reflects rays of light in every possible direction. A few of these rays from each point enter the pupil, and if brought to a focus on the surface of the retina, permit of us seeing the book.

In Fig. IX * we have depicted three rays of light coming from two points of an object in front of a biconvex lens, and we find that after refraction they form an inverted image of the object. Were we to hold a screen at the place where this image is formed we could see it and study it at leisure. We have often found a little difficulty in getting the student to understand that the rays coming from all near objects which we see are really divergent, and not convergent, as he is apt to suppose from the fact that the object in nature is so much larger than the pupil of our eye. We hope Fig. IX will make this clear.

Now, the distance between the object O and the lens L always has a constant relationship to the distance between the lens and the image I, which is expressed by the formula

$$\frac{1}{f} + \frac{1}{f^1} = \frac{1}{r},$$

Where f represents the distance of the object from the lens, f^1 the distance of the image from the lens, and r the radius of curvature of each of the surfaces of the lens.

If two of these quantities are known, then the third is very easily got. The two distances, f and f^1, are called the conjugate focal distances; and the image and object are called foci conjugate to each other. Suppose the object is situated at 20 inches in front of a lens, each surface of which has a radius of curvature of 10 inches—required to find the distance of the image behind the lens. Substituting values in the foregoing equation we get

$$\frac{1}{20} + \frac{1}{f^1} = \frac{1}{10}.$$

Solving this simple equation we find

$$\frac{1}{f^1} = \frac{1}{10} - \frac{1}{20} = \frac{2-1}{20} = \frac{1}{20}. \quad \therefore \quad f^1 = 20$$

That is, the image is also 20 inches from the lens.

Again, if the object is 30 inches in front of a 10-inch biconvex, then

$$\frac{1}{30} + \frac{1}{f^1} = \frac{1}{10},$$

$$\therefore \quad \frac{1}{f^1} = \frac{1}{10} - \frac{1}{30} = \frac{3-1}{30} = \frac{2}{30} = \frac{1}{15},$$

f^1 is therefore 15 inches on the other side.

* This diagram will appear in our next issue.

Again, if the object is 5 inches in front of a biconvex lens of 10-inch radius of curvature, then

$$\frac{1}{5} + \frac{1}{f^1} = \frac{1}{10},$$

$$\therefore \ \frac{1}{f^1} = \frac{1}{10} - \frac{1}{5} = \frac{1-2}{10} = -\frac{1}{10}.$$

This is a very important case, for the minus sign indicates that, after passing through the lens, the rays of light do not converge, but diverge, as if they came from a point 10 inches on the same side as the object. The state of matters is indicated in Fig. X. All that the converging power of the lens has been able to effect is to make the rays less divergent than they were before entering the lens. There is no *real* image formed, but the point f^1 is called the virtual focus of f, for after their passage through the lens the rays appear as if they came from f^1.

FIG. 10.
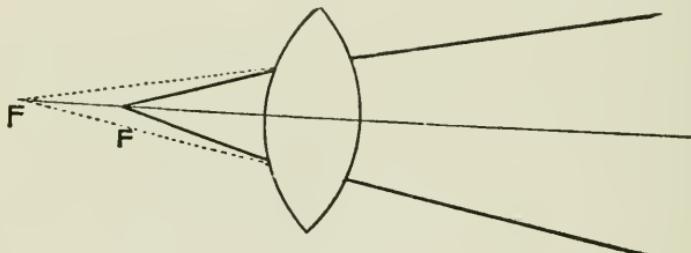
Concave lenses always tend to disperse rays of light. Hence they never have a *real*, but only a virtual focus.

The distances for this virtual focus, and of the object from the lens, can always be got by the preceding formula, always remembering that the focus and its conjugate are on the same side of the lens.

When we come to speak of the refraction of the eye, we will enunciate these principles again. Meantime the student may work out various examples for himself.

The methods of testing the refraction of the eye depend on the theory of conjugate foci. Hence, although in a very elementary way, we have given this subject a prominent place.

Lenses, as used for testing purposes, are of five kinds— viz., spherical convex, spherical concave, cylindrical convex,

cylindrical concave, prismatic. At present we have only to deal with the first two varieties. We shall speak of cylindrical glasses when treating of astigmatism and of prisms in connection with anomalies of convergence and divergence.

The numbering of spherical lenses for ophthalmic purposes is easily understood. The power of any lens depends upon its radius of curvature, and the index of refraction of the glass of which it is made. Were the index of refraction of glass always a constant quantity, then with a given radius of curvature we would always be able to tell the focal length of the lens by the formula

$$F = \frac{r}{2\,(\mu - 1)},$$

Where F = focal length; r = radius of curvature; μ = index of refraction.

Were the index of refraction of glass always a constant quantity, say $1\cdot5 = \frac{3}{2}$, then we could express the number of the lens, either by its focal length or by its radius of curvature. For if, in the above equation, we write $1\cdot5$ for μ, then

$$F = \frac{r}{2\,(1\cdot5 - 1)} = \frac{r}{2 \times \cdot5} = \frac{r}{1} = r.$$

But as the index of refraction of glass is not a constant quantity we cannot express it in terms of the radius of curvature, because this radius must vary with the index of refraction in order to preserve the equality of the equation. The natural suggestion, then, is to express the power of the glass in terms of the focal length. In this way we might call a glass which unites parallel rays of light at a distance of 40 inches, a glass of 40 inches convex. Or if it dispersed parallel rays of light, so as to give them a virtual focus of 40 inches, we might call it a concave glass of 40 inches, and so on. Such a system is perfectly clear and well defined. Or if we wished, we could take the metre and its fractions as our nomenclature. It is, however, found more convenient to number glasses not according to their focal lengths, but according to their refractive power, and to take as our standard of measurement for convexes that glass which has the power of bringing parallel rays of light to a focus at a metre from its surface; for concaves, that glass which has the power of causing parallel rays to diverge as if coming from a virtual focus of a metre. The first glass is called a convex glass of one dioptry,

generally written + 1 D; the second a concave of one dioptry, generally written − 1 D.

If the convex unites the rays of light at only half the distance from its surface that the first does = 50 cm., then it must have twice the refractive power of the first but only half its focal length. Such a glass is called a convex lens of two dioptries = + 2 D. Conversely, a lens with twice the dispersive power of the first is called a concave lens = − 2 D. As there is a very considerable difference in the focal length of a glass of 1 D and another of 2 D, it has been found necessary to put in fractional parts of a dioptry, at least in the lower numbers.

It is always right that the student should be able to express a lens given in dioptries or in its equivalent focal distance. We have therefore given a table of all the spherical lenses in dioptries, in centimetres and in English inches.

Dioptries.	Centimetres.	English Inches.	Dioptries.	Centimetres.	English Inches.
0·25	400·	157·	5·5	18·	7·16
0·5	200·	78·	6·	16·	6·5
0·75	133·	52·	7·	14·	5·6
1·	100·	39·37	8·	12·	4·9
1·25	80·	31·	9·	11·	4·3
1·5	66·	26·	10·	10·	3·9
1·75	57·	22·	11·	9·	3·5
2·	50·	19·	12·	8·	3·27
2·25	44·	17·	13·	7·7	3·0
2·50	40·	15·	14·	7·1	2·8
2·75	36·	13·	15·	6·7	2·6
3·	33·	11·	16·	6·2	2·4
3·5	28·	9·	17·	5·9	2·32
4·	25·	8·	18·	5·5	2·17
4·5	22·	8·7	20·	5·	1·9
5·	20·	7·8			

The student should not, however, try to carry these lists in his head; but he should be able at once to convert the one reading into the others. This is easily done, if he remember that there are 100 centimetres in a metre, and 39·37, nearly 40 inches in the same length. Given, then, a glass of 2 D, be it plus or minus, $\frac{100}{2}$ gives its focal length in centimetres, and $\frac{40}{2}$ in inches.

Cases containing all the lenses required for testing sight can readily be had from any good optician. These cases vary in price, from about £6 to £12. Along with the glasses, they generally contain frames, into which the lenses may be

fitted. As many of these trial frames are not well fitted for testing purposes, Mr. Prescott has, at our suggestion, made a new model for us, represented in Fig. XI, which we have found to answer the purpose very well.
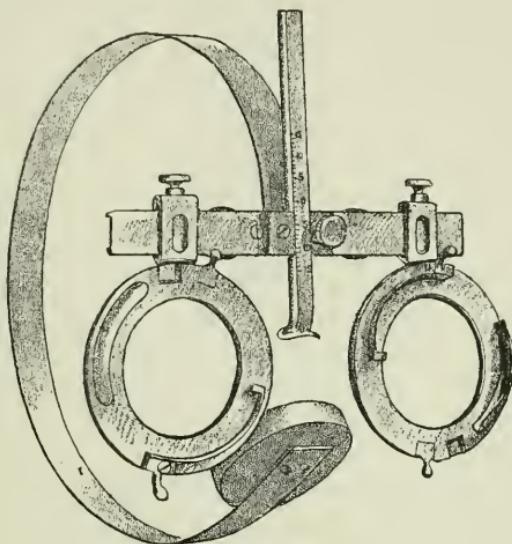
Fig. XI.

It consists essentially of a light metal spring, which extends from the occiput to the root of the nose. Here it joins a crosspiece which carries the lens holders. Each lens holder can be removed along the crosspiece separately and independently of the other.

NOTES ON SKIN DISEASES.*

By DAVID COUPER, M.D.,
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Mr. President and Gentlemen,—It is now such a long time since we of this Society had a discussion on diseases of the skin, that I have considered it not inadvisable to direct your attention to this subject for a short time this evening, should it only be for the purpose of refreshing your memories with respect to them. I shall make no attempt to review the recent progress of dermatology, though such a review would be full of interest and instruction, but will content myself with noticing, in a brief and simple manner, a few of the

* Read before Glasgow Southern Medical Society.

improvements in treatment which have been brought forward,
and making such comments on them as my own observation
may suggest.

Of all the dermatoses the inflammations are by far the most
important, if in no other respect at least in this, that they
are the most common, and that the general practitioner is
expected to be able to treat them successfully. They formed
the subject of a paper read last year before the American
Medical Congress, by one of the foremost dermatologists of
the day, Dr. Oscar Lassar of Berlin. Only to that part of
this paper which deals with treatment shall I refer, although
its scope was very much greater, and is well worthy of
careful perusal. The following is the method he adopts in
all cases of dermatitis, whether called eczema or by other
names; and it is pursued, he says, even in the most violent
cases. It depends upon the following out of three indications
—viz., cleanliness of the affected part, promotion of healthy
action, and protection during the process of recovery. These
indications are fully acknowledged in ordinary surgery; their
application in the domain of dermatology is, however, not yet
quite so well recognised. As Lassar remarks, "In surgery,
no one would allow dirty and decomposable matter to remain
within the field of absorption;" and there is not only no
reason why the skin should be exempt from the operation
of this rule, but there is abundant reason for the strictest
observance of antisepticism.

The process by which cleanliness is secured fulfils at the
same time the second of the above indications. The patient
is placed in a bath of water, the temperature of which is about
90° F., and is gently rubbed over with soft soap (sapo-mollis).
This loosens and removes the epidermal *debris*, and causes a
free circulation of the blood in the capillaries, "and probably
moves obstruction in the congested small vessels by flushing
them with an increased current," in much the same way
as gentle friction acts beneficially in mammitis. In many
cases this is sufficient, especially if they are acute, or if the
skin is delicate; the temperature of the bath is then reduced
by a few degrees, the soap washed away, and the patient
submitted to a tepid or cold water shower bath, and carefully
dried. The third indication is met by the application of an
emollient, the favourite form of which, with Lassar, is—

Acid. Salicylic, ...		2 pts.
Pulv. Amyli.		
Pulv. Zinci Oxid, . . .	āā 24	,,
Vaselin Flav., ...	50	,,

In cases where the soap alone does not suffice, its action is supplemented by the free application of tar in a similar manner. The later stages of the process are the same as when the soap simply is used. The formula for the tarry application is as follows:—

> Ol. Fagi Pinguis,
> Ol. Rusci,
> Ol. Olivarum, āā partes equales.
> *Syn.*—Tar.

To quote the author himself, "the leading steps of the process are—

" 1. The removal of pathological adhesions.

" 2. The short application of tarry preparations.

" 3. The permanent application of indifferent preparations."

There is perhaps nothing absolutely new in this procedure, for we are all familiar with the valuable keratolytic properties of soap and tar, and they are in every day use in skin practice. Hebra's method of treating chronic eczema of the legs is in many respects just like Lassar's, the solvent action of the green soap being there taken full advantage of, and, as we all know, with good results. But the novelty of Lassar's method consists in the boldness with which these agents are employed, and the emancipation which he gives us from the fear of using water, that has prevailed amongst us since Hebra's time. All these agents we have used, but in a very timid and gingerly fashion, for teachers and text-books have all united in impressing upon us the necessity of the greatest care in handling tar; to use it only on a small surface at first; to use it largely diluted, and to increase the strength by slow and cautious degrees; while water is as a routine instruction to patients by many practitioners almost absolutely forbidden. The French school shares with us this timidity in the use of tar.

That the process rests on sound principles I have over and over again satisfied myself, but I have not yet had the courage to adopt it in very acute forms of eczema, one reason being that any such cases I have recently had were among a class of patients which did not allow of its application; in other cases I have used it frequently and with good results. The difficulty of getting heavy beech oil in my neighbourhood just at the time I wanted it led me to take to the following formula as a substitute for Lassar's. I have adhered to it, for I have found it fulfil all the indications much as his own would, and it is really not very different. It consists of

Creasoti,	.	.	.	.	.	.	ʒi.
Ol. Cadeni,	.	.	.	.	.	.	ʒi.
Ol. Olivæ,	.	.	.	.	.	.	ʒii.

Syn.—Liq. Picis. Co.

The creasote is, as you know, the active principle of heavy beech oil; oil of cade is very similar to oleum rusci, the one being obtained from birch oil, the other from juniper.

Illustrative Cases.

Mrs. B., æt. 59, complained of an acute eczema which was situated on her back and chest, and was preceded by a severe itching. The appearances were those of an erythematous eczema aggravated by scratching; the two areas were distinct. It is possible the skin lesion here was of nervous origin, for, as it appeared, a neuralgia of the face, of a rather severe kind, became better. In all other respects, the patient was healthy; she had a good appetite, was regular in her bowels, and her urine contained no sugar or albumen. I treated her for some time in the orthodox fashion without alleviating the symptoms, except in a very slight and temporary degree. At length I had recourse to the treatment I have been describing, as far as it was possible to do so in a house in which there was no bath, and in ten days the skin was very much improved. The treatment was continued, and to-day it would be difficult to detect any difference between the sound skin and that which was inflamed; the itching persisted, but was relieved by quinine, and since this paper was begun the patient has quite recovered. The *modus operandi* in this case was to wash the parts with water about the temperature mentioned; to apply with the naked hand a little soft soap, and then to rub on with a small soft sponge a very little— about a teaspoonful—of the tarry compound. The whole was then washed off with cooler water, and the parts dried, after which the emollient paste, already described, was applied on lint. The paste proved too irritating, and another of a similar composition, but containing boracic instead of salicylic acid, was substituted. Internal remedies were also employed with apparently good effect.

Mrs. C., æt. 50, a fishmonger, suffered from an eczema rimosum between the fingers, which was disagreeable to her customers as well as to herself. The treatment in her case was purely local, and the disease succumbed in three weeks. She had been under treatment by various physicians for between four and five months.

In infantile eczema the compound tar must be diluted. Mary M., æt. 1½, had an apparently ordinary attack of eczema of the face, which was treated in the ordinary way with various applications, as well as with medicines given internally, but it proved very intractable, and seemed aggravated rather than relieved. At the beginning of the year it presented a typical example of eczema madidans. I began Lassar's method with a little anxiety, for I was afraid that, owing to the delicacy of the skin, this might not be a case for it; but to my own satisfaction, and no less to that of the parents, a great improvement was made in a week, and the child speedily got well. In this case the active cause was dentition, and it is possible it may again operate to reproduce the disease, but in the meantime the child's face is free of eczema. The compound tar was in this case diluted with an equal quantity of olive oil, and its action was in no way assisted by internal medication.

I could cite further examples of eczema successfully treated in this way, but time and space do not permit. I shall quote only two other cases—one of pemphigus, and the other of acne vulgaris—which have been to a certain extent subjected to it.

Maggie M., æt. 21, a patient of my friend Dr. A. Y. Morton, of Drymen, was sent by him to me on account of a persistent pemphigus. I recommended the administration of large doses of arsenic, and the use of tar and soft soap as described. I have not seen the girl since; but Dr. Morton has informed me that there are now but few traces of the eruption left, although he has still continued the arsenic as a precaution against a relapse. He told me she would willingly come to be shown here, but as Drymen is not very accessible, the journey occupying a long time, I have not thought it necessary to ask her to do so.

Jessie P. had a subacute attack of ovaritis, which was followed by pustular acne on the ordinary localities. The early stages were treated with sulphur ointments in the usual way until desquamation ensued, when the tarry preparation was applied with good results, the papules being now very much reduced in size, although they are still present, and the suppurating points are altogether gone.

I daresay I have now said enough to show that we have in Lassar's method of dealing with inflammatory diseases of the skin a very reliable one, and I would commend it to your attention.

The salicylic or boracic acid preparations which have been

mentioned are examples of pastes as distinguished from ointments, and for their introduction we are again indebted to Lassar. They have been described as a link between powders and ointments. This is in some measure a very accurate description. In all inflammations in which there is much exudation, whether serous or pustular, these pastes are superior to ointments, which are impervious to moisture, as they absorb the discharge, leaving the surface dry. For example, in conditions resembling that left by a fly blister, you will find them very suitable applications. They are composed of ground starch, powdered zinc oxide, and vaseline as a basis, with which any of the ordinary antiseptics, iodoform, chrysarobin, boracic, salicylic, or carbolic acid, may be incorporated.

Eczema of the nipples, during the early days of nursing, and sometimes, indeed, much later, is a very painful and intractable affection, especially when crusts and fissures form. Till a year or two ago I was in the habit of treating this with spirituous applications, glycerine of tannic acid, and sometimes with simple glycerine. The results were seldom satisfactory. At that time, thinking over the healing action of iodoform when applied to other raw surfaces, I considered it advisable to try it on the nipple, and I used it dissolved in ether and painted on with an ordinary camel's hair brush, a preliminary step being to dry the nipple thoroughly with cotton wool. The result is that the iodoform is deposited in all the fissures and interstices of the nipple as a fine powder. I have not been uniformly successful in curing fissured nipples in this way; but a very large majority of my cases having benefitted by it, I now make it my routine practice, taking, of course, great care to have it wiped off as far as possible before the child is put to the breast. I did not know that any one else used an ethereal solution of iodoform for any purpose; but I have observed recently that Skene, of Brooklyn, employs it in some cases of pruritus vulvæ, applying it, however, not with a brush, but with an atomiser in the form of spray, and with considerable force, so that it gets into all the folds of the mucous membrane.

It is to be remembered, in dealing with eczema, that there is no single method of local treatment which will give relief in all cases, and he who expects to hit upon a specific will probably have more failures than successes. In all forms of the complaint, even the most localised, topical applications may cure, but as long as the cause is present the disease will tend to recur. It is therefore necessary to devise means for

preventing recurrence, by discovering and counteracting the
cause. The best dermatologist is he who can best do this.
The cause is sometimes to be found in the habits, the occupation,
the diet of the patient, sometimes in the clothing, and it is
rather unpleasant to find that an eczema, which has baffled
one, it may be for months, has been banished by another
physician, simply by causing the patient to wear silk instead
of woollen underclothing. The complaint may depend on
diathesis and it must then be met by appropriate regimen and
medication. In this connection, permit me to recall to your
recollection, Dr. Schweninger, Bismarck's physician, who
found that, by regulating the diet, many forms of skin disease,
even apparently purely local, may be cured. The change
enforced may be very simple, such as the substitution of solid
for fluid food, or *vice versâ*, changing the order and times of
meals, omitting certain articles and introducing others. It is
also to be borne in mind that certain accidents *may* occur in
healing an eczematous eruption. To those of you who are
interested in this aspect of the subject, I should recommend a
perusal of a report on a short but instructive series of cases by
Brocq of Paris which recently appeared in the *British Journal
of Dermatology.*

It is rather late in the day now to mention Beiersdorff's
preparations, for these have been before the profession for
several years. As, however, many seem to be, as yet, un-
acquainted with them at all, I may be permitted to once
more call attention to them. They were suggested by Unna,
of Hamburg, but are prepared by Beiersdorff, of Altona,
Hamburg, and may be obtained through the druggists, some
of whom now keep them in stock. They consist of a very
thin sheet of guttapercha, somewhat, indeed, like our own
guttapercha tissue, coated on one side with oleate of
aluminium containing the medicinal substances, and backed
on the other side with coarse muslin; another sheet of muslin
protects, as you notice, the medicated surface; this is removed
when the plaster is about to be applied. I have employed
these plasters in callosities, eczema, lupus, and chronic ulcers
—in treating all of which they are very useful. They are
handy, cleanly, easily manipulated; they do not run as
ointments do, are free from rancidity and greasiness. I have
had very good results in treating cases of lupus vulgaris with
the 10 per cent salicylic acid mull. For the samples shown I
am indebted to Mr. Archibald Young, of Edinburgh, from
whom I got them fully a year ago for the purpose of
exhibiting them here. You will see that they contain a

chrysarobin mull for use in cases of psoriasis. This is
certainly better than the ordinary way of using chrysarobin,
by rubbing it on as an ointment, for the offensive staining
of the linen is thereby avoided. But it seems to me
inferior to Besnier's way, which consists in painting on
on the patch, previously washed and dried, a solution of
chrysarobin in chloroform. This is well rubbed in with a
coarsely haired brush, and when it has dried, a solution of
traumaticin—that is, guttapercha dissolved in chloroform—is
painted on. This has all the advantages of Unna's mull, and
it can be more closely and accurately applied to the spot, the
only objection being that there is more time occupied in the
application than by the other way. In most other cases
the plasters seem to me very excellent preparations.

I have said that the salicylic plaster is useful in treating
lupus vulgaris. The acid itself, however, made up into an
ointment or paste of proper strength is a very valuable agent
in many dermatoses. In my own practice it is in daily use.
It can be used in all proportions, from 1 to 50 per cent, and
as powder it may be applied full strength. As a 10 per cent
paste, I have recently used it in a case of strumous ulcer on
the cheek of a boy, William P., who was first brought to me in
October last. The ulcer presented the usual appearances, and
was, in the first place, scraped with a Volkmann's spoon, the
patient being under chloroform ; the raw surface was then
dressed with iodoform. The case got on very well ; but the
patient being removed to the coast, either from carelessness
or inadvertence, the dressing was discontinued, and a relapse
occurred. I saw the boy again, about six weeks ago, and
prescribed the following ointment, which was to be changed
daily :—

Acid. Salicyl,	.	.	.	.	gr. lx.
Creasot, .	.	.	.	.	fl℥j.
Ung. Zinci et Vaselin ad	.	.	.	℥i.

This was continued for about three weeks, when a superficial
slough came away, having a healthy - looking granulating
surface, considerably depressed below the skin level.   A
dressing of iodoform in vaselin (℥j ad ℥j) was then applied,
and the face is now all right again except for the scar.   At
the present time I am treating a similar case in this way.

Treatment of skin diseases by the application of chemical
and protective or other agents is not always successful, and
many skin complaints are amenable to other modes. Ulcers,
especially those on the legs of patients with feeble circula-

tion, are almost as intractable in many cases as any malady not malignant can well be. Strapping, bandaging, all forms of application fail, the patient is discontented, and the physician disheartened. In many of these cases healthy action going on to complete recovery can be started by making deep incisions through the ulcer into the tissues forming the floor and edges. I have practised this method in a few cases with success. Dr. F. Späth is, I believe, the originator of this operation, but older practitioners tell me it is only an old method revived. The incisions are made well into the healthy tissues, and their lips caused to gape widely; when bleeding has ceased iodoform or boracic acid is dusted on and a bandage firmly applied. This is taken away in six or seven days, when the whole appearance of the ulcer is found improved. I must add that I have had cases which, treated thus, resulted in failure.

In French dermatology a great deal of attention has been spent on mechanical treatment. This knife which I show is an invention of Vidal of Paris, who uses it in lupus, both common and erythematous, and in various other forms of skin disease. A series of incisions varying in depth with the nature of the case are made parallel to one another, to be followed a few days after by another series of similar parallel incisions, but crossing at a more or less acute angle the first series. Other series may follow as required. The rationale of this process is the obliteration of the smaller vessels and capillaries, and the consequent destruction of the morbid products. The scarification is not confined to the area affected, but to the surrounding zone of healthy tissue. The bleeding is controlled, if excessive, by the ordinary methods, pressure and cold, and the dressing is the simplest, as boracic acid and corrosive sublimate.

I have had several cases in which I endeavoured to carry out this process of scarification not in lupus alone, but also in other diseases, especially rosacea, but the scarifications, with the consequent bleeding, is so disagreeable, and the proceeding is so tedious, that it is only with extreme difficulty one can persuade patients to persevere with treatment. In those cases which do not soon become weary very fair results ensue. Mrs. M., a young married lady, has been now under treatment for some months with rosacea affecting the nose; she has persevered in a commendable manner, and she is now very much improved in appearance. She and her friends are pleased with the improvement so far, and I believe I shall be able to carry it still farther. Scarification is not by any

means a novelty in the therapeutics of the skin for it has been practised by, among others, Balmanno Squire of London, and Volkmann of Halle. The difference between Vidal's and theirs is that he insists on the incisions being parallel at regular distances and carefully crossed as I have stated.

The last subject I wish to bring before you to-night is a Yankee notion. It is the cutaneous punch or trephine invented by Dr. E. F. Keyes of New York. As you will notice, the instrument is a little trephine, and it is useful in the case of very small growths, which may be excised quickly with very little pain and with very little scarring remaining. It was invented for a special purpose—viz., for removing a large number of spots from the face after a gunpowder explosion. It proved very successful and its sphere of operations has gradually extended. I shall not at this sitting venture on a further description of this, but trust to have an early opportunity of submitting for your judgment a demonstration of its varied uses.

CURRENT TOPICS.

Glasgow Pathological and Clinical Society.—At the meeting held on Monday, 12th May last, the following office-bearers were elected :—

President,	Dr. David Newman.
Vice-President,	Dr. Samson Gemmell.
Treasurer,	Dr. J. B. Russell.
Secretary,	Mr. A. Ernest Maylard.
Editorial Secretary,	Mr. Henry Rutherfurd.

Other Members of Council.

Dr. J. Crawford Renton.	Dr. T. K. Dalziel.
Dr. James A. Adams.	Dr. John Lindsay Steven.

The following notice of motion was submitted by the Council : —" That Rule I of the Society's Rules, which reads thus— 'The Society shall be named the Glasgow Pathological and Clinical Society, and shall consist of not less than Forty members,' be altered to read thus :—' . . . not less than Fifty members.'" This motion must lie on the table until the October meeting of the Society.

QUEEN MARGARET'S COLLEGE AND THE MEDICAL TEACHING OF WOMEN.—The Annual Meeting of this College was held on the afternoon of Monday, 29th April, 1890, Dr. Hector C. Cameron presiding. The chief interest of the meeting centred round the question of the medical education of women. The College propose to institute a faculty for the medical training of women, but it is not to be forgotten that already means for this end exist in our city. The Governors and Teachers of St. Mungo's College have all along been ready to make arrangements for receiving lady medical students, and during the present summer session some six or eight ladies are taking clinical instruction in the Wards of the Royal Infirmary. We are not so sure that the fact of there being already a medical school in connection with the Royal Infirmary is such an "obvious difficulty" in the way of teaching ladies as Professor M'Kendrick in his remarks seemed to indicate. Why should the ladies not come "into contact with the ordinary students of medicine" in the course of their studies? In the study of music and the fine arts male and female students work harmoniously together in the same schools, and why not in the study of the science and art of medicine? A few details with regard to the arrangements for dissection being carried out, we see no reason why ladies desirous of entering the medical profession should not take out their whole course in an ordinary medical school. We have during the past winter performed *post-mortem* examinations before a class composed of ladies and gentlemen, and have experienced neither difficulty nor awkwardness in carrying out all the necessary demonstrations. In all medical schools the close proximity of a large general hospital is an absolute necessity, and in the case of a medical school for women in Queen Margaret's College the absence of this essential is a serious difficulty. The Wards of the Western Infirmary are already crowded with students, and the distance of the Victoria Hospital is a most serious obstacle. Why not have the entire school for women within the precincts of the Victoria Hospital, or for that matter in the St. Mungo's College? This, it seems to us, would be a more feasible proposal than that of the Directors of Queen Margaret's College.

NEW PREPARATIONS, DRUGS, INSTRUMENTS, &c.—We have from several firms received samples of new pharmaceutical preparations, which we have pleasure in bringing under the notice of our readers.

Messrs. Burroughs, Welcome, & Co., of Snow Hill, London, send specimens of the following articles :—

(*a*) The Wallich's Improved Inhaler. The following advantages are claimed for the instrument :—It is equally adapted for cold inhalations and for the inhalation of steam charged with such medicaments as pure terebene, ether, or essential oils, as may be necessary for inhalation, by dropping the inhalant upon the sponge contained in the glass cylinder. The full benefit of the inhalant is experienced, as a continued current of air rushing into the jar through the orifice in the handle, drives off a regular current of steam which displaces the medicament to be inhaled from the sponge. It strikes us as an exceedingly simple and efficient apparatus for medicated inhalation.

(*b*) A Sample of Diuretin (Knoll). This is a new diuretic remedy, and is a preparation of theobromine (theobromin-sodio-salicylate.) Theobromine is a diuretic by virtue of a direct action upon the kidneys ; and, although very slightly soluble in water, its salt (Diuretin) dissolves in less than half its weight of water when warmed, and remains dissolved on cooling. A single dose of the medicine is 15 grains ; a daily dose should be about ƺiss. It is said to have produced diuresis in cases where digitalis and strophanthus have failed.

(*c*) Specimens of Toilet Lanoline. This, as made up in the tubes in which it is supplied, forms a very elegant article of toilet.

From the *Liquor Carnis Co., Limited*, 50 Holborn Viaduct, London, we have received a bottle of their " Caffyn's " Liquor Carnis. This is a meat juice obtained by a cold process, with the addition of a carbo-hydrate. It is claimed for this preparation that it contains an unusually large proportion of the nutritive principles of the meat, and is not merely a stimulant, but a real food as well. Our readers should give it a trial.

NEW NOVEL.—*The Bell of St. Paul's*, by Walter Besant, has rapidly attained a large and deserved popularity. In it the author says—" This is an age of Apollinaris Water "—a very true remark, seeing that no less than fifteen million eight hundred and twenty-two thousand bottles were filled at the Apollinaris spring in the year 1889 !

REVIEWS.

Cyclopædia of the Diseases of Children, Medical and Surgical. The articles written especially for the work by American, British, and Canadian authors. Edited by JOHN M. KEATING, M.D. Vol. II. Illustrated. Philadelphia: J. B. Lippincott Company. Edinburgh: Young J. Pentland. 1889.

A FEW months ago we reviewed the first volume of this Cyclopædia. The second volume has now been in our hands for a considerable time, and frequent reference to it warrants us in expressing our high appreciation of its value.

Part I is devoted to Diseases of the Skin, and is the work of various authors. Some of the articles are much more complete than others; indeed, some of them seem to us to err on the side of being too brief for a work of this nature. The article on the commonest of skin diseases, Eczema, is from the pen of Dr. Arthur Van Harlingen, and is admirable. The same author writes on Purpura, and draws attention to a rare variety of that disease, known as " p. fulminant " or *p. foudroyant*, and invariably fatal in a few hours or days after the appearance of the first ecchymotic spots. There is a very full article on Nævus, by Dr. Lewis S. Pilcher, which, however, offers no new line of treatment for any of the forms of that disfiguring affection. The parasitic skin diseases have a few illustrations devoted to them, of such common objects as lice, acari, fungi, &c. We would much rather have seen illustrations of various other skin affections, but we suppose that the price at which the book is sold would not warrant expenditure of money on coloured plates of skin diseases.

Part II deals with Constitutional Diseases, and Diseases of Nutrition. Dr. Ashby has a long article on Scrofulosis, which he defines from the clinical point of view rather than from the pathological. Dr. A. Jacobi writes on Tuberculosis, and in both of these articles the question of transmission of these diseases from tubercular cows is considered, but in neither of them is an authoritative answer given. Both articles are well worth perusal, as are also the papers on Syphilis by Dr. Post of Boston, on Rachitis by Dr. Thomas Barlow and Dr. Judson Bury, and on Scurvy by Dr. Barlow. In the latter paper Dr. Barlow records his experience of scurvy both in infants and in young children, but he has

somehow omitted to draw attention to cases of hæmaturia, undoubtedly due to scurvy, and yet the only apparent symptom of that lesion met with in infancy when artificial feeding has been entirely employed. Dr. Barlow directs attention to the fact that many cases of so-called acute rickets are cases of scurvy superimposed on rickets, and curable by antiscorbutic treatment.

In Part III the various Diseases of the Respiratory Tract are discussed according as they affect the nose, the pharynx, the larynx, or the lungs.

Diseases of the Nose receive full treatment, particularly those of an obstructive character. A very interesting chapter is devoted to Reflex Cough; Dr. A. W. MacCoy (Philadelphia) describes various kinds of this cough—among others, one which he names "night cough of children," and which he describes thus:—"Nocturnal cough in an infant or child, without pulmonary implication, occurring toward midnight, the child being in the recumbent position, is almost certain to depend upon a catarrhal inflammation seated in the nasal passages or naso-pharyngeal cavity." This cough is due to accumulation of secretion on the inflamed mucous areas, and is cured by local treatment.

Sir Morell Mackenzie contributes a short article on Tumours of the Larynx, giving a table of the cases he has met with in children since the publication of his work on *Growths in the Larynx.* He is inclined to think that such tumours in children are much more frequent than is supposed, and that they form nearly half of the cases of laryngeal growths that are met with. Malignant tumours are, however, almost unknown in childhood. He advises in general removal by endolaryngeal treatment.

Among the articles on Pulmonary Diseases we have read with special interest that on Pleurisy, because in our experience pleurisy with effusion is frequently overlooked, the signs not being of the distinctive characters met with in adults. This fact is admitted in the article in question, which details somewhat fully the symptoms, attaching, however, more weight to pain as a diagnostic sign than we are inclined to do. But the writers of the article have not explained how it is that in a pleural effusion in infancy the respiratory murmur may be bronchial all over the affected side, for the statement that "the pulmonary tissue and the chest-walls of children yield more quickly to the influences developing sonorous vibrations," is sonorous but not satisfactory. They speak of the vocal fremitus as a sign of the

greatest value in determining pleural effusion, but the fremitus must be tested most carefully and by the finger-tips only. The remarks on treatment are very good, as is also an article on Empyema, dealing mainly with its treatment. In regard to the causation and frequency of empyema, however, the following sentences are rather startling :—" Pneumonia stands in the front rank as a predisposing cause for empyema, even the cases occurring in the course of a typhoid fever or a rubeola are usually preceded by an inflammatory process in the lung. Scarlatina may be mentioned next, and then tuberculosis. In the latter case the tubercular process may be general or may at first be confined to the pleura." " It may be worth while, however, to call attention to the occasional insidious character of the disease, especially in very young children, and to emphasise the importance of always examining the chest of an infant, even if evidence of pulmonary disease is wanting or consists only in a slight dyspnœa."

An interesting chapter on Affections of the Mediastinum, by Dr. Wm. A. Edwards (San Diego), contains a tabular statement of all recorded cases.

Part IV deals with Diseases of the Circulatory, Hæma-topoietic, and Glandular Systems. It opens with a brief article from the pen of Dr. Da Costa on the Functional Disorders of the Heart. He relates these to the same causes as give rise to these conditions in the adult ; but he also draws attention to a variety of functional disorder hitherto undesignated, which he calls, for want of a better name, " impressionable heart." In this, irregular rhythm seems to constitute the whole malady ; at all events, no gastric or other disturbance is to be found. " The heart's action is at times preternaturally slow ; intermissions are common, or a series of small beats followed by fuller strokes is noticed ; the heart exhibits in the most marked manner the influence of the respiratory acts, especially in deep breathing, and becomes very irregular if the breath be held ; medicines depress the heart quickly ; during any febrile state the first effect is the disappearance of the irregularity in the accelerated pulse." This impressionable heart seems to run in families, and persists for many years.

Dr. Cheadle, who had contributed a valuable paper on Rheumatism to the first volume, writes an important article on Endocarditis, acute and sub-acute, in which he discusses the causation in a very able manner. He is strongly of opinion that chorea is, in the main, an expression of the rheumatic diathesis, and that murmurs arising in connection

with chorea are as truly due to endocarditis as is the case in rheumatism, and are equally persistent, though they frequently enough are not obtrusive during the choreic attack, and often disappear for a time. In this article, as in that on rheumatism, Dr. Cheadle insists upon a reduplication of the second sound at the apex as the first sign of endocardial inflammation, specially common in children.

This section contains other interesting articles, which we can only mention : on Congenital Affections of the Heart, by Dr. Osler ; on Enlargement of the Heart, Myocarditis, and Cardiac Aneurism, by Dr. Mitchell Bruce ; on Chronic Endo-carditis, by Dr. Samson ; and on Diseases of the Pericardium, by Dr. Rotch.

Part V seems somewhat out of place in this volume, dealing as it does with Diseases of the Mouth, Tongue, and Jaws.

Nerves of the Human Body, with Diagrams. By Alfred W. Hughes, M.B., C.M. Edinburgh: E. & S. Livingstone. 1890.

This work consists of a series of plates of the cerebral and spinal nerves, showing their communications and distribution, with letterpress giving summaries of the chief points in their anatomy. Many of the plates are taken from W. H. Flower's well known work, and are by far the best and most instructive of the series ; as Mr. Hughes has, however, adopted a different colouring for each nerve in any given diagram, he has produced results in some of them which Prof. Flower would probably not approve of. For example, in the plate of the eighth pair (Willis) he shows the whole pharyngeal branch of the pneumogastric as composed of spinal accessory fibres, and a part of the external laryngeal nerve as derived from the same source, but credits the recurrent laryngeal with no accessory fibres. Now. the experiments and observations of Bischoff, Bernard, and Roberts definitely proved many years ago that the motor fibres of the recurrent are derived from the spinal accessory. In the description of the descendens noni nerve no mention is made of the probability of its consisting entirely of fibres from the upper cervical nerves, and not being derived from the hypoglossal at all. So satisfied is Macalister of the accuracy of this theory that he has changed the name to *descendens cervicis*. Seeing that Mr. Hughes has for the most part slavishly followed the description of the nerves given in the last edition of Quain's *Anatomy*, we are the more surprised at this omission ; but possibly he has only read the paragraphs in large

type, and has skipped the notes in smaller print. The
relative size of the several nerves in a diagram has evidently
given him much trouble, and we admit that it is by no
means easy to attain to anything like accuracy in this respect.
We may submit, however, that in Plate VIII, Fig. D, it would
have been as well to have made the sympathetic ganglion
considerably smaller rather than, as it is, distinctly larger
than that on the posterior root of the spinal nerve.

When will anatomists learn that the superior gluteal nerve
does not belong to the sacral plexus? It contains no sacral
filaments at all, and is derived mainly from the fourth lumbar
nerve, so that it is quite time the old mistake of speaking of
it as a sacral nerve was rectified.

Mr. Hughes has omitted the most valuable and useful of
Flower's diagrams—namely, those which show the areas of
distribution of the cutaneous nerves; we think he has, by so
doing, considerably lessened the value of his book.

We can only say that, viewing the work as a whole, it
is wanting in freshness and originality, and fulfils no purpose
which Flower's work would not accomplish much better.

Anæsthetics, Ancient and Modern. By George Foy, F.R.C.S.
London: Baillière, Tindall & Cox. 1889.

Of late the surgical mind has once again been exercised on
the old question—chloroform or ether? Forty-three years
have now elapsed since Simpson introduced chloroform for
the induction of general narcosis, and still opinions differ
strikingly as to which anæsthetic is to be preferred. At the
Glasgow meeting (1888) of the British Medical Association
we find Sir G. H. B. Macleod speaking "as one who has
administered chloroform constantly almost from the time of
its introduction into practice," and declaring that, "after
fairly trying most of the agents in use," he now exclusively
uses that anæsthetic. Next year, at Leeds, another eminent
surgeon, Mr. Teale, insists with equal warmth on the advan-
tages of ether. Only a few weeks ago we have Dr. Lauder
Brunton's address to the Medical Society of London on the
Hyderabad investigations, supporting, as we take it, what has
all along been considered in Scotch schools to be orthodoxy
regarding the effects of chloroform and the proper adminis-
tration of that drug. Mr. Foy's short treatise comes therefore
at an opportune moment, and is likely to be widely read.
After perusal we find ourselves able to congratulate the author
on the interesting and impartial nature of his work. The

earlier chapters contain a historical sketch of the evolution
of anæsthetics, and in the preface attention is drawn to the
fact that "modern anæsthesia . . . is the outcome of the
work and thought of English speaking peoples." The second
half of the book is devoted to description of the principal
anæsthetics at present in use, and to discussion of their
respective merits and dangers. "In placing the advantages
and disadvantages of the different anæsthetic agents before
the reader," says Mr. Foy, "I have endeavoured to do so
without prejudice. I prefer chloroform to the other anæs-
thetics, and I think that it has not latterly been so highly
valued as its merits warrant." . . . "The fact that
chloroform appears to me to be the most generally useful
of anæsthetics has made me careful to place on record every
fact that militates against its use." We believe the reader
will find that Mr. Foy has done this part of his work in
a spirit of fairness; his convictions are evidently the outcome,
in great measure, of careful clinical observation. At p. 42
it is stated that "to this day, of the many licensing bodies
that grant certificates in medicine and surgery, not one of
them requires the student to be trained in anæsthetics." In
view of this statement we are glad to be able to record our
appreciation of the care bestowed on the teaching of the
subject by the surgical staffs of our Scotch hospitals; but we
think it would be a step in the right direction were the
administration of anæsthetics included as part of the examina-
tion for qualifications in surgery. Whatever the agent
selected—chloroform, ether, and, may we not add, hypnotism?
—the induction of general anæsthesia is a most serious
business. We are inclined to think that when chloroform
is cautiously and intelligently given, the instances where it
must be considered inapplicable are rare indeed; but even
the strongest advocates for the superiority of ether (pp. 124-
126) have to enumerate a lengthy classification of subjects
unsuited for the administration of that anæsthetic. Chloro-
form would therefore appear to possess the threefold advan-
tage—simplicity, wide applicability, and freedom from bad
after effects. At p. 120 Mr. Foy states his own opinion,
that chloroform is the most generally useful, but admits
"there are cases in which, although anæsthesia were produced
by chloroform, it might with advantage be kept up by the
use of ether or the A. C. E. mixture." Chap. XIV contains
useful hints to the anæsthetist, and drawings of the various
forms of apparatus are appended. We believe the book is
likely to be of use to the student and to the practising surgeon.

MEETINGS OF SOCIETIES.

MEDICO-CHIRURGICAL SOCIETY OF GLASGOW.

Session 1889-90.

Meeting XII.—21st February, 1890.

Obstetrical Section.

Dr. W. L. Reid *in the Chair.*

I.—PELVIS REMOVED FROM A WOMAN DELIVERED BY CÆSARIAN SECTION.
By Dr. W. L. Reid.

The Chairman showed a pelvis removed from a woman delivered a few days previously by Cæsarian section.

Dr. S. Sloan was unable to give any opinion as to the cause of death. He felt confident, at the close of the operation, that the woman would live; and certainly, in his opinion, there was no apparent abdominal cause of death, so far as he could make out, at the *post-mortem.*

II.—NOTES ON FUNIS PRESENTATION.
By Dr. H. St. Clair Gray.

Dr. H. St. Clair Gray read a paper on funis presentation, with fourteen consecutive cases. After referring to the various causes of this condition, he dwelt at length on the treatment which, he said, resolved itself into two methods of procedure—namely, reposition of the cord, or withdrawal of the child from its dangerous position. In the first of these he had little faith, as it not only failed in itself, but hindered the accomplishment of the second indication. The only exception was, he considered, in those cases where the membranes were unruptured and external version might withdraw the cord. In one of his cases he had turned the child completely round in this manner, causing the head to pass up to the fundus and down again to the pelvis. In this case the child was born alive; the woman had been previously delivered of two children stillborn from prolapse of the funis. In another of the cases, he turned, but the cord passed between the child's legs and hindered the delivery, and he was obliged to divide the cord, from which there was no hæmorrhage. The rest of the cases were treated by turning, for the most part. One was delivered dead by Dr. S. Sloan with his compression forceps, one by craniotomy, and one by evisceration.

Dr. S. Sloan had more confidence in the genu-pectoral position than Dr. Gray seemed to have. He admitted that, as a rule, turning was much safer in the interests of the child. In the case referred to as having been delivered by his compression forceps, it was evident to Dr. Gray and himself that the child could not be delivered by version. His forceps took eight minutes, which was evidently too long to have the cord compressed with safety to the child. He thought that still births, after forceps, sometimes arose from unascertained partial prolapse of the cord.

Dr. Sutherland asked how long a child might have its cord compressed and yet survive? He had failed in one case where the genu-pectoral position was tried.

Dr. Oliphant thought that where, from any cause, the head did not engage, the genu-pectoral position was likely to fail.

Dr. W. L. Reid said it was impossible to lay down a definite rule about the length of time a child might survive. That depended on the completeness and continuity of the pressure. He differed with Dr. Sloan as regards the forceps. He had, he thought, frequently saved children by the use of the forceps though the head was above the brim, and recommended that method if it was thought the head could be brought through, but if the pelvis were rickety, he advocated version early.

III.—NOTES OF A CASE OF PHANTOM TUMOUR.

By Dr. E. H. L. Oliphant.

The patient was a healthy-looking girl of 22, admitted to hospital in November last. Three years previously she had been struck in the left flank, and was laid up for some weeks with hæmaturia, and had subsequently suffered from attacks of pain in the left renal region, aggravated by exertion and at her menstrual periods. Her medical man sent her in as a case of floating kidney. On admission a tumour was palpable in the left hypochondriac region, moderately movable and easily raised from back to front. It had a distinct ridge upon its anterior surface, and could be rotated on its longitudinal axis. It was clear to light and dull to heavy percussion. The urine was normal. The patient was carefully examined twice under chloroform, and nothing abnormal could be found in the abdomen or pelvis.

Dr. Dalziel suggested that a not improbable pathology might be suggested for this so-called phantom tumour. The very clear history of violent injury to the left renal region, leading to hæmaturia, and not improbably injury to other structures than the kidney, followed by recurring sprains and

local irritation, as indicated by attacks of pain, would undoubtedly lead to a considerable mass of inflammatory new formation and adhesion of neighbouring organs, which, while uninfluenced by the tonic contraction of the psoas, might well pass as of no consequence, but rendered prominent and tense by such contraction, possibly in association with fæces in intestine, would account for the tumour. He had examined the patient, and agreed with the clinical features as mentioned by Dr. Oliphant.

IV.—NOTES ON TWO CASES OF PELVIC HÆMATOCELE.
By Dr. John Edgar.

Dr. Edgar read notes on two cases of pelvic hæmatocele, where the diagnosis was particularly difficult. One was at first taken for a fibroid tumour, and the other for a retroverted gravid uterus.

Meeting XIII.—21st March, 1890.

Dr. Middleton *in the Chair.*

I.—INOCULATION, WITH SUGGESTIONS FOR ITS FURTHER APPLICATION IN MEDICINE, ESPECIALLY IN MITIGATING THE SEVERITY OF MEASLES.
By Dr. Hugh Thomson. (See page 420.)

GLASGOW PATHOLOGICAL AND CLINICAL SOCIETY.

Session 1889-90.
Meeting V.—10th February, 1890.

The President, Professor W. T. Gairdner, M.D., *in the Chair.*

I.—URGENT PAROXYSMAL DYSPNŒA SUGGESTIVE OF PRESSURE OR CONSTRICTION OF AIR-PASSAGES, DIAGNOSIS AS TO SEAT AND CAUSE OF OBSTRUCTION REMAINING OBSCURE TO THE LAST—DEATH PROBABLY FROM SEPTICÆMIA, WITH LOBULAR CONDENSATIONS OF LUNG—SYPHILITIC LESIONS OF TRACHEA AND BRONCHI, AND IN LIVER, DISCOVERED AFTER DEATH—REMARKS.
By Drs. Gairdner and Coats.

Mrs. P., æt. 38, was admitted to the Western Infirmary (Ward 6) on 8th October, 1889. She was very ill on admis-

sion, and became worse afterwards, owing to a peculiar, and to a considerable extent paroxysmal, dyspnœa which, accompanied as it was by noise or stridor in inspiration, was considered to be suggestive of pressure on the air-passages or nerves of respiration; while at the same time the greatest difficulty was experienced in determining the actual seat of the lesion. The report in detail gives the results of an elaborate examination with a view to detect, if possible, aneurism or tumour, but with negative results. Observations during the paroxysms (and even, to a certain extent, at other times) led to the probable inference that the larynx was implicated to the extent of slight spasm of the adductors, or, alternatively, paralysis of the abductor muscles, thus controlling the indraught of air more or less, but no corresponding laryngoscopic changes were found by Dr. Walker Downie, and no aphonia was observed at any time. While, therefore, it was impossible to exclude alto-gether a laryngeal element in the case, it was held to be probable that this was altogether secondary and subordinate, and accordingly no question at all was raised as to tracheo-tomy being performed, even as a measure of temporary relief. Dr. Downie also ascertained that, as seen during inspiration, the three upper rings of the trachea appeared to have an unbroken mucous membrane; the only morbid appearance either there or in the larynx being hyperæmia, possibly due to the general state. In one of the severest paroxysms, carefully observed by Dr. Middleton, pale lividity was notably present, and also a considerable amount of swelling at the root of the neck, probably venous; the urgency of the symptoms being such as to threaten immediately im-pending death by suffocation. There was no absolute dysphagia, but the act of swallowing either solids or liquids was sometimes apt to induce spasm as respects the breathing. Vomiting had also been a symptom, at one time of considerable urgency. The illness was of three to five months' duration, and the frequent attacks of coughing brought up frothy expectoration, often tinged with blood; but there had been no considerable hæmoptysis. On several occasions Dr. Middleton observed that, after a prolonged fit of coughing, with difficulty of breathing, but without any considerable expectoration, she would suddenly throw back her head, as if to straighten the trachea, and that then a considerable amount of sputum welled up, without apparent expulsive effort, giving relief to the breathing for the time. Nitrite of amyl and iodide of ethyl (the latter especially) appeared to have some appreciable amount of control over

the spasms, and were therefore used a good deal, being afterwards replaced by sulphuric æther and inhalations of steam. The treatment in other respects was entirely by expectorants, with digitalis, and also some alcoholic stimulant. The temperature inclined to be febrile, but in no case exceeded 102° F.

A fortnight, or a little more, after admission (26th October) very great improvement was noted as regards all the more urgent symptoms described; a certain amount of stridor, however, continuing almost always present in inspiration, and sometimes also in expiration. About 8 ounces of sputum, collected in twelve hours, showed nothing very definitely characteristic, and no blood, also no tubercular bacilli. Advantage was taken of this comparative quiescence to renew detailed observations on the physical diagnosis, but without any further result as regards the precise locality of the lesion —*i. e.*, the seat of tumour, or of the pressure on the air passages or nerves.

She died about three weeks later (21st November), very peacefully, and without any new accident, except that she had been somewhat delirious at night, and had been steadily losing flesh and strength. During the day she was quite sensible, and did not appear to suffer much from dyspnœa. Intermittent diarrhœa, however, had been present for some time.

It may be added that, the patient being an apparently very respectable married woman, and no obvious history or signs of constitutional or specific disease being present, the question of syphilis was not raised during her life. A few days before her death, however, her husband stated that both he and she had been drinking to excess for some time before her illness commenced. At the *post-mortem* examination Dr. Gairdner renewed to the class his original statement in the summary appended to the report in the *Journal*, that the symptoms were such as to indicate with great probability a narrowing or obstruction in the course of the air passages, but that no clear evidence could be obtained of tumour, and that the precise seat and the nature of the lesion remained alike obscure to the last.

Sectio by Dr. Joseph Coats.—A large ulcer occupies the lower part of the trachea, and extends into the main bronchi. It measures, from its upper extremity to the bifurcation, $3\frac{1}{2}$ inches, and it extends beyond the bifurcation for about half an inch into both bronchi. Its transverse measurement varies. Beginning above with an abrupt edge, which is slightly under-

mined, it is here narrow, but expands considerably till, just above the bifurcation, it almost entirely surrounds the trachea. The ulcer is one essentially of the anterior wall, extending more or less round from that. At its margins it everywhere undermines the mucous membrane, and in several places there are bridges left with passages beneath. This is seen especially in the right bronchus, but also in the trachea. For the most part the ulcer confines itself to the wall of the tube, but on the left side, near the bifurcation, it has penetrated the wall, so that pigmented gland tissue presents inside. This deeper penetration extends into the left bronchus, where the ulcer is deep, and has a very abrupt edge.

The left lung presents almost complete condensation of its lower lobe, but on section it is seen that the condensation is, to a large extent, lobular, the intervening parts being œdematous. The bronchial mucous membrane generally is reddened. The upper lobe is generally œdematous with centres of lobular condensation. The pleural surface of both lobes show a thin fibrinous exudation.

The lower lobe of the right lung is œdematous and partly condensed.

The left lobe of the liver is greatly shrunken, so that, from the suspensory ligaments, its greatest diameter is $2\frac{1}{2}$ inches, and its general diameter is considerably less. On section there are found, in the midst of cicatricial tissue, a number of tumours, whitish in colour, but with a partial caseous condition. These tumours are mainly in three situations— namely, one at the extreme left, measuring three-fourths of an inch in greatest diameter; one at the level of the suspensory ligament, measuring 1 inch; and one near the lower surface of the right lobe. The right lobe is considerably enlarged.

The kidneys and spleen present nothing remarkable.

Remarks.—The ulceration of the trachea is peculiar, and Dr. Coats has not seen a similar condition before. It is evidently an infective ulcer, and is not tubercular. The definite presence of gummata in the liver makes it certainly syphilitic.

The conditions in the lungs are those which are seen when putrid juices are insufflated, there being isolated centres of lobular condensation with a more general œdema.

Remarks by Dr. Gairdner.—As far as my pathological experience goes, it is very exceptional for syphilitic ulceration in the air passages to leave the larynx and upper part of the trachea, as in this case, entirely exempt. This point is one

of some practical importance, because, by the use of the laryngoscope, these parts are brought within the reach of accurate and well defined diagnosis; and it is, accordingly, the more necessary to emphasise the cases in which such diagnosis may fail to reveal .the seat of actual lesion. I remember a case long ago, in the Edinburgh Royal Infirmary, not very dissimilar from the present one, but one in which the cicatrices of an old standing ulceration had produced such a degree of coarctation of the left bronchus as to greatly disable the left lung, and produce most of the physical signs of an aneurism constricting the bronchus; but the patient being a comparatively young girl, and the syphilitic history apparent, the diagnosis was (if I remember rightly) biassed in the latter direction, and justified by the *post-mortem* examination. Treatment by iodide of potassium, fortunately, is equally applicable to both these alternatives, when treatment of any kind can be of use. In writing these words, however, a case recurs to my memory in which a possible false issue was raised by the very fact of previous treatment, and which may serve, therefore, to give point to the revelation of the *post-mortem* examination in the present case. A gentleman in a high social position, of a robust constitution and good stock, and who had, in the main, enjoyed good health, but had undergone a lengthened and elaborate treatment for constitutional syphilis, both at home and abroad, came under my notice in consequence of a harsh barking cough, which left him no rest, and, to a considerable extent, baffled all treatment except narcotics. I forget, at this moment, whether I had seen him professionally at all before this, but being called to a considerable distance in consultation, I spent a Sunday at his house in the country, in order to have every opportunity of fully discussing the case with his medical attendant. It now appeared, on careful examination, that physical signs existed (as in the case just referred to) of coarctation of the left bronchus, with but slightly impaired percussion over the corresponding lung, and yet a very marked deficiency of the respiratory murmur. Learning now, for the first time, that he had consulted a very leading physician in London, but finding it impossible to get sufficiently rapid postal communication, on account of the remoteness of the patient's residence in the Highlands, I telegraphed a brief account of the symptoms and physical signs, with the query—*Syphilis or aneurism?* and thus had the satisfaction of finding that the case had presented itself to this well known authority under precisely the same aspects

as to myself; but, less fortunately, with no new suggestion as to the treatment. It appeared, subsequently, that he had believed himself as a youth to have been infected with syphilis; had undergone all the usual treatment at the time; and after a delay which, in the opinion of a first-class surgeon, had justified the step, had married, and become the father of a family of young children, whom I had the opportunity (without saying a word about it) of examining from head to foot, and thus am able to certify as being, to all appearance, absolutely free from syphilitic taint. Yet after this, and in connection with his later illness, he had been twice to Aix-la-Chapelle, where he had undergone a complicated treatment, founded on the syphilitic hypothesis, of which mercury, pushed to constitutional action, was one of the elements. I confess to being rather doubtful, even now, if this gentleman had ever had syphilis (in the form, at least, of the infecting chancre) at all. Certainly there were none of the usual tertiary or, so far as I could obtain information, any of the more severe secondary symptoms. But, on the other hand, it is not, perhaps, altogether out of accord with experience to suppose that syphilis may have laid the foundations of arterial disease, without manifesting itself clearly in the other forms of late development. At all events, the death of this patient, some months afterwards, by sudden and profuse hæmorrhage, favours the aneurismal hypothesis, as to the cause of the bronchial coarctation. There was no *post-mortem* examination.

Dr. Coats' remarks on the appearances in the case now submitted to the Society leave nothing more to be added, except that the diagnosis was undoubtedly defective in so far that the remote syphilitic history was not worked out during life. The circumstances, however, were urgent, and demanded mainly palliative treatment at first; and the syphilitic infection must have been so very remote that, but for the retrograding and half obsolete gummata in the liver, it would have been unrecognisable even in the dead body.

II.—LARGE MUCOUS POLYPUS REMOVED FROM THE POSTERIOR NARES OF A PATIENT.

By David Newman, M.D.

The tumour occupied the left nostril, the whole of the vault of the pharynx, and, extending down into the mouth, lay upon the dorsum of the tongue when the mouth was closed. The patient suffered for many months from great

difficulty in breathing, but could swallow without discomfort.
The tumour, when removed through the mouth, weighed over
three ounces. Its surface was nodulated slightly, and the
growth was attached to the middle turbinated body by a
long pedicle. A portion of the mucous membrane covering
the turbinated body was removed along with the polypus.
Dr. Newman said that this was the second largest nasal
polypus he had removed. The largest one weighed over four
ounces, and was excised from a gentleman from Nottingham.

III.—A CASE OF ADENO-CARCINOMA OF THE LEFT INFERIOR TUR-
BINATED BODY, AND PERFORATION OF THE NASAL SEPTUM,
IN THE PERSON OF A WORKER IN CHROME PIGMENTS.

By David Newman, M.D.

J. M., æt. 47, chrome worker, was admitted into the Glasgow
Royal Infirmary on the 16th November, 1889, complaining of
inability to breathe through the left nostril, and also of a
swelling on the left side of the nose externally. About
twenty years ago the septum of his nose became perforated.
This he attributes to the action of the irritating chemical
substances amongst which he works, and he says that many
of his fellow-workmen are similarly affected. On examina-
tion a large rounded perforation is seen in the nasal septum,
large enough to allow a shilling to pass from one nostril to
the other. The margins of the perforation are smooth, com-
pletely cicatrised, pale in colour, and free from ulceration.
The anterior margin of the perforation is situated about half
an inch from the top of the nose.

In the month of May last, the patient began to notice
obstruction in his left nostril, which prevented him from
breathing through it, and gave him the sensation of the
presence of a foreign body, but he very seldom suffered
from pain in the nose or elsewhere. On several occasions
he observed small quantities of blood escaping from the left
nostril, but although not much blood appeared at one time,
there was a continuous clear or blood-stained watery dis-
charge.

On examination the swelling is seen to be confined to the
left side of the nose, and this growth, the patient states, com-
menced soon after he felt the nostril was obstructed, and has
gradually increased, but he thinks that the swelling has not
become any greater during the last month. At the present
time respiration through the right nostril is free, and nothing
abnormal can be seen. The patient has never complained of

any pain in the nose, but nearly every night he suffers from frontal headache.

The tumour occupies the anterior half of the left nostril, and almost touches the septum. It is firmly attached to the inferior turbinated body by a hard base, and has grown so as to cause considerable swelling of the face and some displacement of the nasal bones. The tumour is of a pale pink colour, is irregularly nodulated on its mucous surface, and presents somewhat the appearance of coarse œdematous granulation tissue. When its surface is injured it bleeds freely. A small portion, removed for microscopic examination, presents the characteristic structure of an adeno-carcinoma.

[Since the patient was shown to the Society, the tumour has been successfully removed by an operation performed by Dr. Newman.]

IV.—CASE OF UTERUS RUPTURED ON ITS LEFT SIDE FOR NEARLY ITS ENTIRE LENGTH, ONLY A BAND OF TISSUE AT THE OS REMAINING.

By Dr. W. L. Reid.

The patient was sent into the Maternity Hospital in a collapsed condition and after being three days in labour. She was delivered by embryotomy, but never rallied, and died four hours after admission. Before being sent to the Hospital long-continued efforts at delivery had been made— first by various forceps and afterwards by version—and the tear, instead of being at Bandl's ring and transverse, was longitudinal, thus giving ground for the belief that it had occurred during the attempts at version. The *post-mortem* examination showed that the actual conjugate diameter was $2\frac{1}{8}$ inches.

ABSTRACTS FROM CURRENT MEDICAL LITERATURE.

EPIDEMIOLOGY.

By A. K. CHALMERS, M.D., D.P.H. Camb.

The Prophylaxis of Tuberculosis—a Discussion before the Academy of Medicine in France.—Notes of this discussion are contained in several of earlier numbers of the *Gazette Médicale de Paris* for this year. Pollution of the atmosphere by the dried and pulverised sputa of tuberculous patients is regarded by all as one of the recognised methods

of propagating the disease, but the extent to which this dissemination is possible affords M. Sée and M. Hérard an opportunity of advancing varying opinions. According to M. Sée the contagion from this source is much more restricted than is borne by one of the conclusions adopted by the Congress on Tuberculosis. The bacillus is not long-lived, and does not propagate itself outside the body except in cultures; it is not ubiquitous, neither is it present in the air expired by tuberculous patients, but only in such as has been polluted by dried expectoration. M. Hérard, on the other hand, regards the spores as capable of carrying it to longer distances. On the question of transmission of the disease by means of cow's milk there is an absolute divergence of opinion. M. Hérard recommends that the milk should always be boiled. M. Sée asserts, as against this practice, that milk is rarely a vehicle for the bacillus, and, in consequence, an agent in the transmission of tubercle; further, that, contrary to the assertions of M. Vallin, the chemical constitution and nutritive qualities of milk are largely compromised by boiling. Reference is here made to the contradictory conclusions arrived at, on the one hand, by the Commission on the Hygiene of Young Children, and, on the other, by the Commission on Tuberculosis. The conclusion of the former was that cow's milk should never be boiled, but might be given lukewarm; whereas the latter believed that it should always be boiled. M. Laurent, having in view chiefly the alimentation of young children, asks, "Is it a matter of indifference to a child fed in this manner whether he receives his milk boiled or unboiled?" and, viewing the question quite apart from the possible introduction of tubercle, formulates his opinions thus :—

1. Boiled milk, as an aliment, is difficult to digest, and is not fitted to the physiological status of the digestive organs of the newly-born.

2. Gastric and intestinal troubles arise in consequence, and react on the whole economy.

3. As a result, the bodily development does not attain the degree that would have been reached if fed with milk unboiled.

4. The diminished vital resistance which follows the use of boiled milk may thereby facilitate the action of the deleterious influences of the microbic virus.

If one holds, in an absolute manner, the declaration of either Commission, then the unfortunate infants who are deprived of their natural milk supply must either suffer from malnutrition if boiled milk is used, or tuberculosis if it is unboiled.

M. Sée has shown that the unsuitability of boiled milk for infants is indisputable, and that for adults it is only so in a less degree in a large number of cases. The danger of milk as an agent in the transmission of tuberculosis is probably less great than is commonly supposed, and it is possible still further to reduce this by a more extended surveillance and more rigorous inspection of milch cows and their produce. In these circumstances, and in view of the inconveniences of boiled milk from the point of view of nutrition, it is difficult to make any recommendation which would be serviceable under all circumstances.

[As a note, supplementary to the above discussion, it may be well to recall the conclusions arrived at by Dr. Ernst, and published in the first Report of the experiments conducted by the Massachusetts Society for the Promotion of Agriculture.

1. The milk from cows affected with tuberculosis in any part of the body may contain the virus (bacillus) of the disease.

2. The virus is present whether there is disease of the udder or not.

3. There is no ground for the assertion that there must be a lesion of the udder before the milk can contain the infection of tuberculosis.

4. On the contrary, the bacilli of tuberculosis are present and active in a very large proportion of cases in the milk of cows affected with tuberculosis, but with no discoverable lesion of the udder.]

On the Relations of the Bacillus Coli Communis with the Bacillus of Eberth, and with Typhoid Fever. By MM. A. Rodet

and G. Roux (*Compt. Rend. de la Soc. de Biologie*, February, 1890).—In a former communication to the Lyons Medical Society by the above, the suggestion was made of the existence of a specific connection between these two bacilli. The results of a further investigation, extending to a comparative examination of the blood of the spleen, and of the dejecta of patients suffering from typhoid, together with a study of the so-called differential characters of the two microbes, is made the subject of the present communication. The former suggestion is now freely adopted as being fully warranted by the facts brought to light in the later investigation ; and the importance of this relationship, in its bearing on the causation of enteric fever by water polluted with sewage, invests the communication with considerable interest.

The method adopted in the investigations was as follows :—From two typhoid patients blood was obtained from the spleen by puncture ; pure cultures, on gelatine and potato, of a bacillus were obtained therefrom, and the characters of this bacillus completely corresponded with those of the bacillus of Eberth. At the same time, inoculation of broth with the dejecta, and its transference to gelatine, resulted in an almost pure cultivation of the bacillus coli communis being obtained. The investigators, therefore, conclude that this latter multiplies in the intestine of typhoid patients with great rapidity, and that the bacillus of Eberth (found in the spleen as an almost pure culture) is the result of a modification of the bacillus coli in passing through the organism. For confirmation of this they refer to the characters of both. They describe the appearances presented by each when cultivated in various media, and note the effect of temperature and staining, but conclude that there are no differences sufficiently distinct to mark them as two different species. Microscopically there is some distinction, Eberth's bacillus being more stable in type than the bacillus coli ; and they regard the former as the bacillus coli in a state of attenuation or degeneration. "We do not conclude that the bacillus coli gives, in a state of decadence, typhoid fever, which would be in our opinion paradoxical ; but we think that the bacillus coli becomes virulent ' typhigenic,' without notably changing botanical characters, and that it is within the organism, notably in the spleen, that it takes the type of the bacillus of Eberth, degenerating, without doubt, under the destructive acts of the organism. Considering, on the one hand, the tolerance which the organism has for this microbe, as it commonly presents itself in the intestine, and on the other hand the injurious nature of the water contaminated by it, we are necessarily led to the conclusion that in the great majority of cases it acquires, outside the organism, its ' typhigenic ' character."—(*Public Health*, May, 1890.)

NERVOUS DISEASES AND INSANITY.

By Dr. R. S. STEWART.

Cerebral Embolism with Conjugate Deviation of the Head and Eyes. By Mosher (*American Journal of Insanity*, January, 1890).—This is the case of a male patient who became insane at the age of 25. A year later he was admitted to an asylum, and four years afterwards symptoms of general paralysis supervened. This affection followed its usual course for about two years, and then suddenly terminated in an apoplectic seizure accompanied by conjugate deviation of the eyes and head, and coma which lasted four days and terminated in death. The autopsy revealed atrophy of the brain with compensatory increase of cerebro-spinal fluid ; a fusiform aneurism of the left internal carotid ; distension of the corresponding middle cerebral artery, with an organised thrombus a quarter of an inch in length lying at the junction of the internal carotid with the posterior communicating and middle cerebral arteries ; softening and disorganisation of the left frontal and parts of the parietal and temporal lobes and corpus striatum, along with the appearances characteristic of general paralysis, such as cortico-meningeal adhesions and erosion of the surface of the convolutions.

The Psychical Disorders of Peripheral Neuritis. By James Ross (*Journal of Mental Science*, April, 1890).—This is a paper read by Dr. Ross at the last quarterly meeting of the Medico-Psychological Society, held at Manchester. The causes of peripheral neuritis are numerous, but whatever its origin it is liable to be accompanied by psychical disorders which have in all cases a certain family likeness, although the best marked examples of these mental aberrations are met with in the neuritis which results from chronic poisoning by morphia, and by alcohol and the other diffusible stimulants. Four stages are recognised :—(1) A premonitory stage in which the special senses and imaginative faculties are liable to be exalted ; (2) a stage of depression or melancholia ; (3) a transition stage of mania or melancholia with excitement, or of convulsions passing on to (4) a final stage of dementia.

Peripheral (Alcoholic) Neuritis. By Fenwick (*Jour. Ment. Science*, April, 1890).—This is the case of a married woman aged 42, an inmate of the Northumberland Asylum. There was a neurotic history ; her father had chorea, so had her son ; a brother was an idiot, and a cousin deaf-mute. The illness, attributed to alcoholic excess and commencing two years before admission, was characterised by rheumatic pains, "pins and needles" sensations and muscular weakness in the legs, tenderness of the soles and of the muscles, amyotrophy, ankle-drop, patches of hyperæsthesia, analgesia and hyperalgesia, retarded sensibility, abolition of the knee-jerk and plantar reflex, ataxia, loss of faradic irritability with increase of galvanic irritability, impairment of memory, delusions, outbursts of anger, restlessness, and emotion, morbid suspicion, and a lying disposition. Under careful feeding, and the entire withdrawal of alcohol, the muscular power slowly returned, the atrophy diminished, the mental condition improved, and the delusions disappeared.

The Mouth in Backward Children (Imbecile) of the Mongolian type. By Jones (*Jour. Ment. Science*, April, 1890).—Dr. Jones is strongly convinced that vaulted arches are not so common as has been supposed, and that high palates occur mostly in two classes of imbeciles—the microcephalic and the Mongolian or Kalmuck. This last class is a very distinct one, and constitutes about four or five per cent of the total number of imbecile children. In his observations he failed to find any marked prognathism ; the lower jaw was usually more prominent than the upper. The lower incisors rarely met the upper in exactly a straight line ; and the lower front teeth, as also the upper, were not very regular. The V-shaped or wedge-shaped mouth is the most commonly met in the Mongolian type, the whole of the teeth of one or both jaws being involved. Instead of the elliptical arrangement, the teeth occupy two converging lines which meet at an angle in the anterior part of the jaw, and this is frequently accompanied by a high and vaulted palate. In many of these children the enamel is irregular, easily broken down, pitted, and grooved.

Treatment of Insanity by Hypnotism. By Percy Smith and Myers (*Jour. Ment. Science*, April, 1890).—In this paper a tabulated list of patients suffering from mental affections is given, with the results obtained from hypnotism ; also the results in detail of a series of experiments conducted at Bethlem Hospital. Attempts were made in twenty-one cases, with the result that in four there were some benefit, due, however, more to the large amount of personal attention devoted to each case than to any hypnotic influence ; two cases were certainly hypnotised, but without definite result ; and in one case suggestion seemed at first successful, but the effect rapidly diminished. In the others, attempts at hypnotism failed.

Scolioses in Sciatic Neuralgias.* By Brissaud (*Archives de Neurologie*, January, 1890).—The following conclusions are arrived at :—Sciatica is a painful affection, which it is often difficult to limit to the trunk or branches

* See *Journal*, March, 1888, p. 272, vol. xxix.

of the sciatic nerve ; there is often an extension of the neuralgia to certain branches of the lumbar and sacral plexuses, and therefore sciatica is not neuralgia of a nerve, but neuralgia of a plexus. It may evolve without manifesting any morbid phenomena in the muscles innervated by the diseased sciatic, but sometimes true contractures are noted, which may extend beyond the territory of the sciatic nerve. There are some sciaticas which are accompanied by a lateral deviation of the vertebral column (scoliosis). Most often this is on the side opposite to the neuralgia, but it may occur on the same side ; these are designated crossed and homologous scolioses. The former is the commoner, and occurs in non-spasmodic forms ; while the latter occurs in the spasmodic type. The rachidian deviation is owing to the body being supported on the sound limb, and, to a certain extent, to inaction, voluntary or involuntary, of the lumbar and buttock muscles of the affected side. When the deviation is towards the affected side, it is due to contracture of the muscles, which sometimes extends to the territory of the lumbar plexus. In cases where the muscular spasm is limited to the leg, and does not invade the lumbar region, the scoliosis is crossed, as in non-spasmodic sciaticas.

Myxœdematous Idiocy (Pachydermic Cachexia). * By Bourneville (*Archives de Neurologie*, March, 1890).—The total number of cases of this affection hitherto observed and collected by M. Bourneville is twenty-five, and the present article is devoted to another and well marked instance. In this case (a male) nothing particular was observed till the age of 3, when development was arrested, and he became fat and swollen. At 25, when he came under observation, his height was only 3 feet ; the anterior fontenelle was unobliterated ; the eyelids were so swollen that the eyes were scarcely visible ; the cheeks were voluminous and fatty ; the lips thick and prominent from prognathism ; the neck extremely short and thick, the thyroid absent ; on each side of the neck there was a lipomatous mass, and similar formations existed on the lateral and inferior parts of the trunk and in the axillæ ; the abdomen was very voluminous, and there was an umbilical hernia ; the hands and feet were short, fat, and pachydermic ; the skin generally waxy-white, translucent in parts, or rugose ; gait was heavy ; the voice raucous, speech slow, vocabulary very limited, and intelligence but slightly developed.

Derby Borough Asylum—First Annual Report.—This new Asylum, of which Dr. Rutherford Macphail is Superintendent, is designed for the ultimate accommodation of 400 patients. Its sanitary arrangements are of the most modern type, but its extent of₂ farm lands is much under the recommended standard, and some of the heating arrangements are, in the Commissioners' opinion, a failure.

SURGERY.

By HENRY RUTHERFURD, M.B.

Bloch on the Treatment of Wounds — Germicidal and Sterilised Dressings.—The memoir begins with a discussion of the three principal antiseptics—carbolic acid, iodoform, and corrosive sublimate—and the author directs attention to the dangers associated with each of these, and more especially with the last mentioned. After quoting a large number of cases of fatal mercurial intoxication, both from surgical and obstetrical practice, reference is made to the general erethemas, eczemas (of the surgeon's hands and fingers), stomatitis, and diarrhœa, further and more particularly to its injurious action on the kidneys, and to mercurial marasmus.

Further, its bactericide action is by no means so certain as was at one time supposed ; it contrasts unfavourably with carbolic acid in the case of the

* See *Journal*, vol. xxxi, p. 392.

bacillus tuberculosis; in contrast with albuminoid matters it requires (Laplace) the addition of an equal quantity of tartaric acid to act efficiently; finally, corrosive sublimate is volatile.

Nevertheless it is beyond doubt that sublimate has given excellent results, but it must not be forgotten that the introduction of this dressing coincides with that of dry dressings.

Additional drawbacks are that surgical instruments cannot be exposed to its action; that accidents in its use have more grave results, and occur more frequently (want of distinguishing odour) than with carbolic acid; and, finally, that it does not prevent erysipelas (v. Bruns, Neikerlioz).

Dry dressing, as practised by the writer, embodies a development of the principles laid down by Guérin, with this difference, that the cotton wool is sterilised. In immediate contact with the wound there is an absorbent wool, and this is covered by a layer which is non-absorbent, the latter acting like the macintosh of the Listerian dressing, with this difference, that while it causes any discharges to spread out in the dressing, it does not preclude the drying of the wound and the dressing.

The ordinary procedure of the author in respect to operation wounds is as follows :—The region to be operated on is cleansed with soap and water, ether and carbolised water (3 per cent); the instruments are sterilised by exposure to steam and then laid in carbolic solution (3 per cent). At the end of the operation, the wound is irrigated with carbolic solution of the same strength (sometimes it is first swabbed with chloride of zinc, 10 per cent) ; all ligatures and sutures are of catgut, prepared by steeping first for forty-eight hours in 5 per cent watery, then in 5 per cent alcoholic, solution of carbolic acid. The author has discarded Schede's sublimated catgut, culture experiments having shown it not to be invariably sterile. Drainage tubes (red rubber) are kept in 3 per cent carbolic solution. Two layers of sterilised gauze are interposed between the absorbent dressing and the wound to keep the cotton wool from sticking to the stitches. The drainage tubes are removed on the third, fourth, or fifth day, and the dressing then applied remains on for two or three weeks.

Summing up the results of twenty-nine cases treated in this manner, the author is able to say that wounds treated with sterilised cotton wool heal in ideal manner. Nevertheless, on examining the secretions of the wounds, as was done in every case, there will be found microbes even in the "aseptic" clots from the drainage tubes withdrawn on the third, fourth, and fifth days. None the less we are able to record perfect union, by first intention, without any suppuration whatever.

The microbes found were monococci, diplococci, and staphylococci. Cultures usually showed these to be staphylococcus albus ; rarely staphylococcus pyogenes aureus or bacilli were found.

Cases treated with a layer of iodoform gauze next the wound give equally good results. Here, too, there were microbes in the clots ; from one case, which healed ideally, there was obtained the staphylococcus pyogenes aureus.

With carbolised gauze next the wound the results were the same: the wounds healed in perfect manner, but microbes were not absolutely abolished. In only two out of seventeen cases could they not be found. They must be supposed to lodge in the epidermis, and to be practically ineradicable from it ; it must be supposed that their development is inhibited by the antiseptics applied to the wound during and after the operation.

Conclusions.—1. Large operation wounds may heal as perfectly, in a clinical sense, when dressed with sterilised materials not containing any "antiseptic" (bactericide) agents as those treated with antiseptic dressings.

2. Large aseptic operation wounds, dressed simply with sterilised cotton wool, heal generally by first intention.

3. The secretions of wounds, healing in ideal manner, without any suppuration whatever, without *malaise* on part of the patient, contains microbes, as a rule, whether the dressing contain bactericide agents, or consist simply of sterilised materials.

4. Wounds containing microbes (abscesses, &c.), dressed simply with sterilised cotton wool, may pursue a course identical with that which they would have pursued had they been dressed with antiseptic (bactericidal) dressings.

Though he has not treated wounds with corrosive sublimate, the author thinks that (apart from disadvantages already referred to) he could have got equally good results with it. It must be rare, however, that wounds so treated are free from microbes, which is proved by the curious smell of these dressings, as well as the accounts which have been given of the defects of this agent as a durable antiseptic.

The logical issue of the investigation would be the recommendation of sterilised cotton wool as the best form of dressing. For a private clinique, where two intelligent persons can divide the work between them, it is available with full security. But in large hospital cliniques, where the carrying out of details is divided among a number of persons, a certain security is gained by the addition of an antiseptic agent.

For this reason the author recommends the treatment of wounds by carbolic acid (Lister), with this modification only, that the outer layer of the dressing shall be not of macintosh, but of sterilised non-absorbent cotton wool. This cotton wool is preferable in all respects, since, as Hippocrates long ago maintained, wounds are to be treated dry.—(*Reprinted from Nord. Med. Arkiv.*, 1889, Bd. xxi, No. 2 to 7.)

Congenital Stricture of the Bowel—Imperforate Ileum.— The latter name is applied by Mr. Bland Sutton to a condition induced by variations in the obliteration of the vitello-intestinal duct. As incomplete obliteration of this duct, in its intra-abdominal part, results in the formation of Meckel's diverticulum ; so, on the other hand, the process of obliteration may extend to the wall of the intestine opposite their point of communication. The resulting condition varies from a certain amount of constriction to complete obliteration of the lumen of the ileum in this situation.

The author refers to cases described by Hudsen (*Trans. Path, Soc.*, vol. xl), in which the patients, from whom the specimens were taken, had died in youth with symptoms of chronic intestinal obstruction. He suggests that some cases of narrowing of the ileum, which have been set down to contractions of the mesentery, are really dependent on the abnormality which he describes.

He describes a case of obstruction in a child of forty-eight hours, in which, after satisfying himself that the obstruction was not at the anus, he opened the abdomen. At a point eighteen inches from the ileo-cæcal valve, the ileum was found completely obliterated for a distance of one inch. The upper distended *cul-de-sac* was brought to the external wound, and an artificial anus established. "Meconium and flatus passed freely ; the child rallied and took food. . . . Six hours later it suddenly expired."—(*International Journal of the Medical Sciences*, November, 1889.)

Traumatic Strictures of the Œsophagus.—Hacker (Vienna, 1889) discusses the localisation of these. This is determined—(1) By the anatomical conformation of the œsophagus ; (2) by the mechanism of the swallowing apparatus. Measurements made on dissected specimens, and the examination of plaster casts of its lumen, agreed in showing the existence of three normal narrowings—(1) At the level of the cricoid ; (2) at the level of the bifurcation of the trachea ; and (3) a lowermost one just above the cardiac orifice.

Other narrowings, in the form of flexures or constrictions, may result from spinal curvatures. The results are based upon 100 *post-mortem* and museum preparations, with a number of clinical reports from Billroth's clinique. Strictures are single and multiple ; the majority of writers describe them as most frequent in the upper and lower parts of the œsophagus.

As regards the physiology of the swallowing act and its influence in

localising the injury, it is pointed out that in the lower part the bolus passes more slowly, and here, accordingly, corrosives have more opportunity of acting.

In strictures in the neck and upper part of thorax, the use of the sound gives fairly good results, as do œsophagotomy followed by sounding, and also the operation of Gussenbauer (œsophagotomy followed by internal division of the stricture?) In lower seated strictures, dilatation from above is not free from dangers. Permanent dilatation by a tube is to be recommended here, but earlier recourse must be had to gastrostomy and sounding from below.— (Grisson, Hamburg. *Centralb. für Chir.*, 15th February, 1890.)

DISEASES OF THE EYE.

By FREELAND FERGUS, M.B.

New Test for Lateral and Vertical Deviations of the Eyes in Attempted Binocular Fixation.—Dr. Maddox has, in the present number of the *Ophthalmic Review*, given a description of his new test for lateral and vertical deviations of the eyes in attempted binocular fixation. We venture to think that this test, though simple in the extreme, is so reliable that before long it will supersede most of the others in general use. Dr. Maddox describes the form of his apparatus as follows :—

" The only apparatus absolutely requisite is a glass rod, such as most will have already in their possession. Any glass stirring rod will do provided it does not taper.

" The principle of the test depends on the property of transparent cylinders, to cause apparent elongation of any object viewed through them, so that in looking at a distant flame, with a glass rod before one eye, it appears converted into a long thin line of light, so dissimilar from the flame itself, as seen at the same time by the other naked eye, that there remains practically no desire to unite the two images, whose relative position indicates the conditions of equilibrium in the two eyes. The length of the rod is immaterial, if not less than a third of an inch ; the best thickness is a quarter of an inch.

" To test for heterophoria, stand the patient at six metres from a small flame, such as a gas-jet turned down till it is only a quarter of an inch high (or a more distant street lamp will do as well), and place the rod horizontally before one eye, a coloured glass before the other.

" If the line passes through the flame there is orthophoria as far as the horizontal movements of the eyes are concerned. Should the line lie to either side of the flame, as to most people it will, there is either latent convergence or latent divergence manifested ; the former, if the line is on the same side as the rod (homonymous diplopia) ; the latter, if to the other side (crossed diplopia)."

Again, " Hold the rod vertically so as to produce a horizontal line of light. If the line pass through the flame there is no tendency to vertical deviation, but if it appear above or below it there is hyperophoria of that eye which sees the lowest image ; that is, if the flame is lowest there is a tendency to upward deviation of the naked eye ; if the line is lowest, of the eye before which the rod is."

The author then proceeds to mention the various ways in which this deviation may be measured. The simplest, and perhaps the best, is the old method by means of prisms, in which prisms of various strengths are used to correct the deviation. He says, " In testing for hyperophoria the edges of the prisms should be up or down ; *up* if the flame appear lower than the line ; *down* if the flame appear higher than the line. In testing for horizontal deviations their edges should be in or out ; *in* if the diplopia is homonymous ; *out* if it is crossed. The deviation is half the refracting angle of the prism."

We have already tried Dr. Maddox' invention, and it has given us the greatest satisfaction.

Sympathetic Ophthalmia.—Gayet has recorded a most interesting case in the March-April number of the *Archiv d'Ophthalmologie*, in which he seems to prove that sympathetic ophthalmia is transmitted from one eye to the other by the optic nerves and chiasma. In these structures he found unmistakable evidence of an insterstitial neuritis, which gradually extends from one eye to the other. In his case the choroid did not seem affected ; the only part of the uvea which was much affected being the part concerned in accommodation. He believes that in his case the infection spread through the vitreous to the optic nerve, then to the chiasma, and then to the nerve of the other eye. He points out that Mackenzie, who was the first definitely to describe sympathetic ophthalmia, was strongly of opinion that the optic nerves were the medium of transmissiom from one eye to the other. Gayet, of course, believes in its being an infective process, and refers at considerable length to Deutschmann's monograph.

Ocular Complications in Influenza.—*La Grippe* has at last found its way into ophthalmology. In the March-April number of the *Archiv d'Ophthalmologie* there is an account of the cases of this nature which have been seen by Professor Badal at Bordeaux.

The list is a most formidable one, including conjunctivitis, affections of the lacrimal passages, keratitis with conjunctivitis, infective keratitis, iritis or irido-choroiditis, glaucoma, muscular paralysis, amblyopia.

We are not surprised to learn from the author that in the majority of his cases he could attribute the malady to an infective agent being present.

Cocaine as a Local Ophthalmologic Anæsthetic.—Cocaine still holds its own as the best local anæsthetic. Erythrophlene, which was tried some time ago, caused too much irritation, and, moreover, could not be depended on.

Strophanthine and ouabaïne have lately been tried, but have been found wanting.

Panas states that although ouabaïne acts as an anæsthetic, if applied to the conjunctiva of a rabbit, it has no influence on the human eye. He also says, that although strophanthine has a much more potent action than ouabaïne, yet it is far too irritating to be applied to the eye.

Books, Pamphlets, &c., Received.

The Nursing Record Series—Lectures to Nurses on Antiseptic Surgery, by E. Stanmore Bishop, F.R.C.S. Eng. London : Sampson, Low, Marston, Searle & Rivington.

Etude Anthropométrique sur les Prostitueés et les Voleuses, par le Dr. Pauline Tarnowsky. Avec 8 Tableaux et 20 Dessins. Paris : Aux Bureaux du Progrès Médical, 14 Rue des Carmes. 1889.

Clinical Diagnosis by Dr. Rudolf v. Jaksch ; translated from the Second German Edition by Jas. Cagney, M.A., M.D. ; with an Appendix by Prof. Wm. Stirling. London : Charles Griffin & Co. 1890.

Year Book of the Scientific and Learned Societies of Great Britain and Ireland. Seventh Annual Issue. London: Charles Griffin & Co. 1890.

A System of Practical and Scientific Physiognomy, by Mary Olmsted Stanton. Vol. II. Profusely illustrated. Philadelphia and London : F. A. Davis. 1890.

INDEX.

Index.